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MONITORING ACTIVITIES

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5
SURVEILLANCE AND ANALYSIS DIVISION
CHICAGO, ILLINOIS
JANUARY 1981

ABSTRACT

A review has been completed of the water monitoring activities within the Region to determine the adequacy of existing monitoring activities to meet program needs. Following a determination of program needs and an identification of the programs and program objectives established to satisfy those needs, an assessment was made of both the State and Federal activities against the program objectives. Evolving issues, primarily the need to develop monitoring capability for toxics and hazardous materials were also reviewed. In addition, the changing direction in resource utilization evident from strategy papers under development by Headquarters have also been taken into consideration. From this assessment and review, findings and recommendations were formulated which lead to a monitoring management strategy which will result in the coordination of resource utilization and the re-direction of monitoring resources needed to ensure a meaningful data base for use by program managers during the period 1981-1985. The findings, recommendations and strategy are described in Chapters 1 and 2. The supporting information on program needs, monitoring program objectives and the assessment of current programs are described in the Appendices. The base year for the review was CY 1979.

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Chapter 1

FINDINGS/RECOMMENDATIONS

1. A MONITORING PERSPECTIVE

Environmental monitoring is an important step in the management and protection of human health and welfare and natural resources. Ideally, monitoring is the activity that "drives" the progression of events from problem identification and assessment, through management decisions on such issues as pollution abatement programs, and, ultimately, to the enforcement of environmental regulations. A succession of federal laws and guidelines have attempted to relate the purpose of monitoring directly to management goals. These have ranged from U.S. Bureau of the Budget guidelines for the coordination of water data acquisition issued in 1964 to the Federal Water Pollution Control Act Amendments of 1972 (PL92-500) which introduced effluent standards to water quality management programs and effluent monitoring to the activities of regulatory agencies. The most recent guidelines for monitoring programs was the Basic Water Monitoring Program (EPA440/9-76-025) issued in 1977.

The objectives of Water Monitoring Programs have been:

- To provide data, information, or reports necessary to determine compliance with permit terms and conditions,
- To develop and maintain an understanding of water quality (causes and effects of such quality of the waters) for the purpose of supporting water pollution control activities in relation to the achievement of national goals according to the Act,
- To report on such quality and its causes and effects, and
- To assess the effectiveness of the pollution control programs.

Until recently, however, subjective evaluations rather than scientific principles have been the basis for the detailed design of most data collection programs. Subjective judgement was adequate to meet the needs of many programs in the past, but todays monitoring activities need to be supported by sound scientific principles. The National Academy of Science, in 1977, listed three major deficiencies in the overall environmental monitoring program of EPA:

a. The inadequate use of scientific principles to design, operate and evaluate monitoring programs.

b. The need to monitor in anticipation of and to detect new environmental problems.

c. The fragmentation of monitoring among and within various governmental agencies.

These fundamental problems in monitoring produce inefficiency and less information per unit of effort.

The ultimate purpose of a monitoring program is to fulfill the data and information needs of various regulatory and planning agencies. To this end, the following criteria must be stressed.

a. Monitoring must be an integrated part of an overall program--not an end in itself.

b. Monitoring is an activity that "drives" the remainder of the pollution control programs.

c. Feedback from management is necessary to establish monitoring priorities.

Therefore, the Surveillance and Analysis Division completed a review of the water monitoring activities in Region V. This review was considered essential for several reasons.

a. Resource restrictions at Federal and State levels necessitates a look at what is being done and what needs to be done to most effectively and efficiently utilize resources.

b. Lack of coordination and the possibility of duplication of monitoring necessitates a "hard" look so that the highest priority needs can be satisfied within resource limitations.

c. A renewed emphasis on the human health aspects of water pollution control based on an awareness of the scope and potential hazard posed by toxic wastes and their disposal.

d. A need to correct the deficiencies in the monitoring program so that more scientific principles were applied and needs were met.

The goal of the review was to develop a management strategy which provided for monitoring activities that did not merely produce data but also provided facts, findings, conclusions and recommendations from which program managers could make decisions.

2. BASIC WATER MONITORING PROGRAM

The Basic Water Monitoring Program (EPA440/9-76-025) (BWMP) is a general framework for organizing monitoring programs. None of it was ever tied to program needs and in reality is nothing more than a basic concept paper. The state by state assessment revealed that the BWMP is not being fully implemented because of the individual program needs and resource constraints at the state level. The states have implemented portions of the basic program and have modified others to meet their specific needs. The following summarizes several major monitoring activities and offers recommendations.

a. Ambient

(1). Findings

The basic ambient monitoring program consisting of 1000 stations was designed to evaluate water quality trends on a gross national basis and to check compliance with water quality standards. The assessment looked at states implementing this portion of the program and not the philosophy underlying it. The usefulness of the information being produced by the program is questionable. An Office of Water and Waste Management ambient assessment contained in a February 8, 1980 memo fron the chairman of the Committee on Monitoring and Information Management to the Adminiatrator, USEPA showed that for the conventional pollutants, the only readily available, long term information on stream quality was dissolved oxygen. In addition, EPA-HQ is currently proposing a revised strategy which addresses water use issues.

The States have implemented the fixed national ambient network (185 stations in Region V) as described in the BWMP and, in addition, have many of their own sites. Two critical shortfalls related to the reporting of this information are incomplete data entry into STORET and the lack of an evaluation of the adequacy of the network.

(2). Recommendations

- The additional ambient monitoring performed by the States and others should be re-evaluated as it could possibly be eliminated and the resources directed elsewhere.
- The apparent shift in emphasis from trend monitoring to water use issues must be evaluated at the Federal and State level and the implications for monitoring activities in Region V addressed. No additional stations should be added at this time.
- In light of these two, the fixed ambient network should be re-evaluated to check the significance or insignificance of sites located around major dischargers.
- Data should be entered into STORET and an evaluation report prepared.

b. Biological Monitoring

(1) Findings

This portion of the monitoring program has suffered due to its "pilot/ proposed" status which has resulted in a lack of support. It also has been considered as a totally separate monitoring program. In reality, it should not be considered separate from the chemical and physical aspects of a survey, but an integral part of a well-planned, balanced monitoring thrust. Biological information, as well as chemical and physical data, is needed at the fixed ambient stations, as parts of intensive surveys and in effluent monitoring.

(2). Recommendations

Biological monitoring should be integrated into all monitoring activities as a parameter, just like the physical and chemical parameters we have historically looked at (i.e. the design of specific monitoring activities should address the need for biological information and be included where appropriate, just as we select physical and chemical parameters).

c. Effluent Monitoring

(1). Findings

The assessment contained in Appendix C addressed achievement of numbers of inspections and effluent monitoring activities. However, effluent monitoring was not assessed in terms of adequacy, i.e. addressing major problems areas. Experiences in the field have identified problems in self-monitoring and, as a result, questions exist concerning the quality of discharge monitoring reports (DMR) and the usefulness of annual inspections at all major dischargers.

(2). Recommendations

° Although EPA-HQ annual guidance and work load model are aimed at 100% compliance inspections at all major dischargers, it is recommended that rather than annual surveys at all majors, performance audit inspections (PAIs) and CSIs, CEIs, etc, be performed at problem facilities based on a prioritized system. Criteria, such as the following could be used:

1. Identify areas for intensive surveys (target areas) and effluent monitoring from municipal management strategy.
2. New or re-occuring permit deadlines.
3. DMR and O&M problems identified by inspections and/or compliance reviews.
4. Files research to see if previously identified problems were corrected.
5. Verification of attaining final compliance with orders or schedules.

° Inspections at non-problem facilities, where problems are minor or above criteria do not fit should be conducted inaccordance with the Neutral Inspection Plan based on the Marshall v Barlow's, Inc. ruling.

° Enforcement Division should distribute state submitted DMR violation data on a quarterly basis for use by other programs (i.e., 201, 106, etc.)

- Problems with Discharge Monitoring Reports and operation and maintenance problems detected by compliance inspections should be followed-up immediately.

d. Intensive Surveys

(1). Findings

Intensive surveys should provide program managers with information to satisfy priority data needs such as development of waste load allocations, setting water quality standards, and toxics. The data should be used for validation of segment classification and in the calibration and verification of mathematical models. It is questionable from our perspective to what extent the information generated by the intensive surveys at the State level has been used. Most of the states have conducted intensive surveys and prepared technical reports, but less than 40% of the total abstracts have been submitted. The intensive survey program has also apparently been built around addressing single points. These types of surveys are conducted by many entities and in light of diminishing resources should be well planned and designed to meet mulitiple program needs.

(2). Recommendations

- Develop a plan for intensive surveys to take into consideration multiple needs.
- The intensive survey program should be utilized to conduct multiple source (point and non-point) studies and the data generated reported so that program managers can utilize this information in the decision making process.
- The intensive survey efforts should incorporate toxicants and biological parameters where applicable.
- Abstracts must be submitted.

e. Quality Assurance

(1). Findings

Although four of the six Region V states are making progress toward approved quality assurance plans and programs, no Region V state currently has an approved quality assurance package. In addition, no Region V (EPA) monitoring programs have approved quality control plans required by the Region's quality assurance plan. The implication of this for data users is that the data being generated is under scrutiny since it is not clear that samples are collected, preserved and analyzed by approved methodology. An active quality assurance program is essential for the water monitoring program.

(2). Recommendations

- Programs (State and Regional) agree to the time table to be developed with QA Office and implement approved QA/QC plans.

f. Data Management, Interpretation and Reporting

(1). Findings

Data is consistently not entered into STORET. Lack of resources and non-acceptance of the system are implicated as causes for the non-use. STORET has not been an integral part of monitoring activities related to report preparation. For example, STORET has not been responsive to intensive survey data entry. In addition, BIO-STORET has not been utilized and is currently not functional. The absence of approved quality assurance programs raises questions about the accuracy, precision, representativeness and comparability of any data generated, let alone entered in STORET. The non-entry of data also implies that data is not available to be used at the National level and in fact is only used by the generator which compromises multiple program use.

There does not appear to be a clear and concise plan for Regional and State data management and interpretation. There seems to be several foci with no one overall plan for this important portion of the program. The utilization of such a plan depends on a variety of factors. There is a need to maintain effective communication between participants due to the number of jurisdictions and agencies involved, their personnel, diversity of opinions and scientific and technical disciplines and experience and expertise. Continuing fiscal support is a critical factor for the long-term management of data storage and retrieval systems and, most importantly, support for human resources for data interpretation and reporting. The overall object of the data management and interpretation component of Regional water monitoring activities should be to assure coherent, credible and timely reporting.

(2). Recommendations

- Re-evaluate Regional and State data management activities and redevelop and implement a plan for the management and interpretation of data. This plan should be divided into three areas:

  (a). Reporting - to supply a clear understanding of what is being done, why it is being done, who is responsible and when it will be completed. Three levels of reporting-compliance with water quality standards, assessment of trends and changes and determinations of cause-effect relationships may be needed to achieve a clear understanding. This will be pursued further with the states.

  (b). Data Management - includes storage with all necessary identifiers, verification cataloging and retrieval of data and information. Access by others is critical for multi-program and need use.

(c). Data Interpretation - provides analytical procedures to be followed to determine whether or not, and to what degree, the objectives of the monitoring program are being met.

- The data generated from DMRs, intensive surveys, compliance inspections and so forth should be incorporated into the data base. According to latest Headquarters guidance STORET should be used by the Region and states for a data repository (some states may have data storage for this purpose and these should be identified.)

3. Management Considerations

a. Findings

The need for coordination and integration of program needs/request reoccurs at the Federal, State and local level. Responsibility for monitoring is fragmented and many demands are placed on the Federal and State water monitoring resources by many voices at the various levels (Federal to Federal, Federal to State, State to State, State to local) requesting monitoring from program managers, often in conflict with requests from other programs. The satisfaction of multiple program needs in the same area without duplicating resources is critical. The need for well-planned and coordinated monitoring activities cannot be overemphasized. Federal and State managers must jointly identify their needs and available resources and then negotiate and agree upon the activities and management plan for achieving their goals.

b. Recommendations

- Develop and implement a management strategy which is updated annually to meet monitoring needs. This strategy should serve to guide and coordinate regional monitoring plans. It also will describe how the States are involved.

- Monitoring activities are consolidated in appropriate units so that conflicts of requests/resources can be avoided and activities more uniformly controlled.

- A "clearinghouse" for water monitoring activities should be established, if for no other reason than to avoid the embarassment of requesting a monitoring action from another Federal or State manager and being told that "so and so from . . . has already requested or is in the area."

4. SUMMARY

The overall objective of this review, in addition to communication, is the development of a well-planned and coordinated water monitoring strategy which integrates and provides for accommplishing mulitiple program needs. Effective and efficient management of the limited water monitoring resources can provide the data and information needed by program managers and decision makers to fit together the pieces of the environmental puzzle.

CHAPTER 2

WATER MONITORING MANAGEMENT STRATEGY

INTRODUCTION

It is the intent in Region V to carry out a water monitoring program which will provide program managers with a valid data base which is responsive to their needs. For the immediate future, over the next four to five years, the most pressing program needs are: 1) Assurance of the protection of the public health through control of toxic and hazardous sources of pollution; 2) Continued protection of the aquatic environment through control of the more traditional pollutants; and 3) Provision of documentation on the effectiveness of current EPA control programs in terms of water quality. This strategy is intended to further build and refine a data base for use in the important decisions on identification and control of pollution for this type of pollution control program. An update of the strategy should be approved yearly by the Water Media Task Force (WMTF) as the controlling document for water monitoring activities.

Activities for the major issues identified in Chapter 1 are laid out below. An implementation strategy to carry out these activities is described in the summary beginning on page 15.

ISSUE: NEED FOR COORDINATION AND INTEGRATION OF PROGRAM NEEDS ON THE REGIONAL LEVEL

This issue is the underlying concern throughout Chapter 1. In order to achieve the most efficient use of resources, multiple programs needs must be satisfied by well planned, coordinated monitoring activities. This strategy outlines the actions that should be taken on the Regional level and State level to address this problem.

DISCUSSION:

Many of Region V's programs have overlapping interests. For example, permit compliance, water quality standards, and AST/AWT issues are issues that frequently need to be addressed concurrently. Areas like the Twin Cities, Detroit and Cleveland, to name a few, can be designated for comprehensive monitoring programs and mutually beneficial pollution control program based on a blend of monitoring activities arranged. Some areas may be used to evaluate program effectiveness as well. Essential to this "target" concept would be the concomitant reduction of broad brush monitoring conducted under current programs like compliance monitoring, O&M inspection programs, and the State and National ambient monitoring programs.

ACTION #1:

a. Designate "target" areas for comprehensive water monitoring.

b. Collectively identify the environmental problems and determine data needs and priorities program by program, then across programs, in the water media.

c. Establish a blend of monitoring techniques and programs to address the overall problem solution. For example, this could include special DMR audits, O&M inspections, "before" and "after" studies using biological monitoring, etc.

Some aspects of the "target" area approach have already been initiated. This strategy supports the current activity of the WMTF to designate target areas for comprehensive evaluation during the first half of FY '81.

ACTION #2:

a. Designate "targets" for other program needs annually, e.g., "hot spot"studies, compliance inspections at problem or potential problem dischargers, AST/AWT project and river segments under water quality standards review. Target areas should correlate with funded State programs plans and yearly schedules for implementation of the Great Lakes International Surveillance Plan.

   The objective is to reduce the amount of resources used in non-critical areas and make these available for targeted areas.

b. This action will be taken by the responsible program office and included in the State Specific Guidance. Setting targets for "hot spot" studies will require a special coordinating effort becuase "hot spot" efforts are a part of the activities of several different program offices and Headquarters. For example, the Water Division is initiating activites in the water quality standards program to incorporate criteria for 65 toxic substances on the basis of site-specific analysis of toxic "hot spot" areas. The Environmental Emergency and Investigations Branch of S&A Division conducts inspections of hazardous waste sites under the RCRA program. The Enforcement Division examines pretreatment needs related to toxics and other materials. The Great Lakes Program Office conducts fish, sediment,toxic transport and risk assessment studies for toxics in the Great Lakes and its tributaries. Because there is a diversity of programs dealing with toxic hot spots, there needs to be a special strategy developed to coordinate the targeting activity for hot spots mentioned above. The strategy should specify how all the programs mentioned above will be coordinated in order to first identify hot spot areas, and secondly, to prioritize the areas.

DISCUSSION:

The variety of monitoring programs in the Region that are described above and in Appendix B must be coordinated and intergrated where possible to achieve more efficient use of resources and allow better communications to states about our existing monitoring needs. Currently, there is not a single resource in the agency where programs must submit what monitoring is being done in a specific area, by whom, and where the data are stored.

ACTION #3:

Establish a clearinghouse to provide coordination between programs that are generating environmental data. The central clearinghouse will be located in the Water Monitoring Section, Technical Support Branch of S&A. One member from each Division and GLNPO would be responsible for reporting their Division's proposed monitoring activities to the clearinghouse on a routine basis (e.g. effluent guideline studies, hot spot studies, etc.) The clearinghouse would be responsible for advising the program offices of ongoing monitoring programs in the area. Any conflicts raised by the procedure would be raised to the S&A Division Director and ultimately the Water Media Task Force, if necessary.

ISSUE: NEED FOR COORDINATION AND INTERGRATION OF PROGRAM NEEDS ON THE STATE LEVEL

There is a need to annually priortize activities for each State in order to accomplish the most effective monitoring program with very limited resources. This process was followed for the State of Ohio in the FY'81 106 planning process. The following action item outlines the activities necessary to accomplish this task for the rest of the States:

ACTION #4:

a. Determine the level of resources available for each year.

b. Develop a list of proposed monitoring activities for each program and estimate the resources necessary to carry out the function. Transmit these to the State.

c. Negotiate activites to be conducted amongst all parties and complete priortized lists for all states during the second quarter of FY 81-85.

d. Transmit the negotiated agreements to the clearinghouse.

ISSUE: NEED TO RE-DEFINE THE BASIC WATER MONITORING PROGRAM

As stated in Chapter 1 and, synopsized in Appendix B, the Basic Water Monitoring Program (EPA 440/9-76-025) is a general framework for organizing monitoring programs and was not designed for comprehensive monitoring around multifacted program needs. Because of this, there is an inherent gap between what the monitoring program has been designed to do and Water Program needs. Thus, satisfaction of the BWMP guidelines may not be satisfactory when viewed by program managers against their program needs. In response to this, some changes or a re-examination of the BWMP in this light are outlined in the strategy. The components of the BWMP are as follows: ambient monitoring, effluent monitoring, intensive surveys, biological monitoring, quality assurance and data interpretation and reporting. A strategy for each of these components is described below.

AMBIENT WATER MONITORING:

ACTION #5:

a. Evaluate the basic water monitoring network in light of the proposed national strategy (OWWN/MDSD, May 14, 1980) which has as its first goal to describe the quality of the Nation's waters in terms of biological integrity and human health factors.

b. Determine which water bodies/segments are important to monitor to fulfill the Regional, National and International needs. Evaluate the need to locate ambient stations around major dischargers. Link ambient monitoring to areas important to maintaining biological integrity and human health.

c. Determine which projects of the control programs (construction grants, clean lakes, Rural Clean Water Program, etc.) are to be evaluated. Define where "before" and "after" studies will be conducted. These studies may consist of a simple examination of self monitoring reports against ambient monitoring information or more indepth analyses using intensive surveys. Surveys for biological and human health factors will need to be an integral part of some of these studies so that ultimately, the Region can assess program effectiveness in terms of water quality and redirect programs as necessary.

d. Provide the states guidelines with criteria to make a thorough evaluation of their own ambient network to eliminate any stations that are not vital to the Federal/State networks. The intent of this reevaluation is to reduce needs in this activity in order to devote more time to intensive surveys and toxic and biological monitoring. This activity can be part of the SEA and/or State Specific Guidance for FY '82.

EFFLUENT MONITORING:

ACTION #6:

a. The Region and the States should concentrate compliance monitoring on facilities that have problems or potential problems or have known toxic or suspected toxic discharges. A listing of these facilities will be prioritized for each State and an implementation plan agreed upon annually by the Region and the States to do compliance sampling and evaluation at these areas first. Conduct overview inspections at remaining facilities inaccordance with the Neutral Inspection plan based on the Marshall v Barlow's, Inc., 436 U.S. 307 (1978), decision. Steps to achieve this are given below:

- Identify areas needing effluent monitoring. This could include the following as a minimum:

  1. Target areas identified by Water Media Task Force
  2. Facilities having a new permit or reissuance need
  3. Facilities about to enter the construction grants program ("Before" study)
  4. Facilities after the final stages of construction ("After"study)
  5. Facilities that exhibit a problem as a result of O&M inspections, or other source of detection (ie, violations detected in nearby fixed stations.)
  6. Facilities that require follow-up as a result of a "deficiency notice" or similar requirements for remedial action
  7. Facilities that need verification of attaining final compliance with orders or schedules
  8. Major municipal and industrial outfalls discharging directly to the Great Lakes.

- Develop criteria for prioritizing the items in "a" above. This should include a ranking system based on status of noncompliance, status of permit needs and status within the construction grants program where appropriate.

- Develop an agenda for conducting inspections at all remaining facilities including facilities with less critical problems or complying facilities. (This should be done using the criteria/procedures outlined in the Neutral Inspection Plan.)

b. Develop a procedure for follow-up at facilities having problems as identified during inspections.

c. In accordance with the FY'81 SEAs on the Laboratory Capability issues, all States in Region V must develop full field and laboratory capabilities for toxic monitoring and conduct studies in areas designated as suspect of toxic pollution. A projection of laboratory needs over the next three years was to be made. Following that, the States and Region V were to develop an action plan to meet those needs.

INTENSIVE SURVEYS:

An increased emphasis is being placed on intensive surveys to identify toxics pollutants, conduct WLA's on water quality limited segments, assess attainability of water quality standards and to assess the effectiveness of water pollution control programs.

ACTION #7:

a. EPA should supply Region V States with guidelines by which they can determine annually which target areas (previously identified in the "Coordination and Integration" section of this Chapter) will be subjects of intensive surveys and include these in the 106 State Specific Guidance. Multiple source (point and nonpoint) studies should be identified as appropriate in each target area. Abstracts for each intensive survey conducted must be submitted to EPA and the State Specific Guidance should state this.

b. Determine which parameters are applicable for these areas considering the inclusion of toxics monitoring and biological monitoring.

BIOLOGICAL MONITORING:

ACTION #8

a. Biological monitoring should be conducted at designated sites as identified in Action #5. The Region should keep abreast of Headquarter's work to re-define/develop an adequate basis for doing biological studies and of the extensive application of the Hilsenhoffer Biological Index within the State of Wisconsin and the Great Lakes Nearshore Water Quality Index.

b. Implement biological monitoring as part of intensive surveys especially where such surveys are conducted near known or suspected toxic sources. Integrate biological monitoring with activities in "hot spot" program.

c. Implement biological monitoring on programs designed to measure program effectiveness in terms of water quality.

d. Evaluate the use of of bioassays and Ames testing in effluent monitoring to determine the usefullness of the information and their potential as "screening" tools for further toxic analyses.

QUALITY ASSURANCE:

In order to standardise and improve the reliability of data generated in water programs the following activities will be necessary:

ACTION #9:

a. Develop States' Quality Assurance Programs and Regional Offices' Quality Control Programs.

b. When an acceptable reporting mechanism is available for precision and accuracy of the data, the states will be required to submit this information as part of their reporting requirement.

DATA INTERPRETATION AND REPORTING

DISCUSSION:

There are three major deficiencies in the current STORET reporting system. These deficiencies relate to data reporting, data interpretation, and delivery of data to program managers.

ACTION #10:

a. Reexamine the Regional data management system. Develop a plan to improve the coordination between data collection and data uses groups and to gain wider acceptance and participation in the system. When the Regional Strategy has been implemented, there should be more consensus on the benefits of the STORET system, and better cooperation from the states in using the system. This system should include the following:

- Program managers need to define their expectations of STORET.
- A clear explanation of what is being done, how it is being done, who is responsble and why reporting is important. Identify the need for adequate resources to carry out data reporting requirements. Explore the possibility of implementing a new electronic mechanism to expedite data transmission into STORET.
- Criteria necessary to enter data into the system and a clear understanding of how multiple programs can retrieve and use the data. Provide EPA staff information on the use and limitations of the data systems.
- An explanation of how the Region can utilize the information stored. Description of how the Region will collate and reproduce the information for program managers in order to determine if program objectives are being met.

b. Develop a means of recording other pertinent information (for example, HQ data pertinent to Region, 208, 314, compliance monitoring data, etc.) on water quality. Include cummulative data in annual program analyses. Maintain a liason with a Headquarters data systems (STORET/TOXET).

CHAPTER 2
SUMMARY

Major Issues & Actions	Rationale	Region V Lead Assigment	Schedule
ISSUE:			
NEED FOR COORDINATION AND INTEGRATION OF PROGRAM NEEDS ON THE REGIONAL LEVEL	To achieve the most efficient use of resources, multiple needs of programs should be satisfied by well planned, coordinated monitoring studies.	-	-
ACTION #1:			
(a) Designate "target" areas.	Overlapping and common interests in priority areas need to be coordinated into a comprehensive problem solving approach including the monitoring activities.	WMTF coordinator (water)	2nd quarter FY '81
(b) Collectively identify the environmental problems in target areas.	Each program office needs to participate in identifying major environmental problems from its particular perspective so that the problem solving approach developed can be truly comprehensive.	Water	2nd quarter FY '81
(c) Establish a blend of monitoring techniques and programs to address the overall solution.	A good mix of monitoring techniques is vital to understanding the cause and effect relationships in the environment.	TSB	2nd-3rd quarter FY '81
ACTION #2:			
(a) Designate "targets" for other program needs. (e.g., AST/AWT studies, WQS attainability studies, etc.)	Scarce resources are forcing programs to prioritize activities to address the worst problems first to maximize the return on the effort spent.	Responsible program office	2nd-3rd quarter FY '81
(b) Develop a strategy for coordinating programs dealing with "hot spots". Identify hot spot areas, prioritize these areas and develop a scheme for handling these areas.	The multiplicity of programs dealing with some aspect of "hot spot" areas is not coordinated such that the Region has a mechanism to surface, prioritize, and handle these problem areas.	WMTF-TSB	FY '81
ACTION #3:			
Establish a clearinghouse in S&A to provide coordination between programs.	There needs to be a single location for cataloging and coordinating monitoring activities for the Region.	TSB	2nd-3rd quarter FY '81

SUMMARY
(continued)

Major Issue & Activities	Rational	Region V Lead Assigment	Schedule
ISSUE:			
NEED FOR COORDINATION AND INTEGRATION OF PROGRAM NEEDS ON THE STATE LEVEL	In order to accomplish the most effective monitoring program with very limited resources it is necessary to obtain a regional/state consensus on what is environmentally and programmatically important to do each year.	–	–
ACTION #4:			
(a) Determine level of resources available.	Level of resources available establishes the baseline against which monitoring activities can be priortized.	Water	2nd-3rd quarter FY '81
(b) Develop list of proposed monitoring activities; estimate resources; transmit to state.	Regional offices need to propose to the States what they feel can be done within existing resources.	Program Offices	2nd-3rd quarter FY '81
(c) Negotiate activities to be conducted; complete prioritized lists.	State priorties for monitoring activities may not conside with Federal priorities. There is a need to negotiate what will be done to the satisfaction of both parties and finalize the list of prioritized activities.	TSB	2nd-3rd quarter FY '81
(d) Transmit negotiated activities to clearinghouse.	For purposes of maintaining coordination, all proposed monitoring activities need to be sent to the clearinghouse for review.	TSB	2nd-3rd quarter FY '81

SUMMARY
(continued)

Major Issues & Actions	Rational	Region V Lead Assigment	Schedule
ISSUE:			
NEED TO RE-DEFINE THE WATER MONITORING PROGRAM	The inability of current monitoring activities to address program needs has caused a major reevaluation of the water monitoring program and to some extent a redirection of some aspects.	-	-
Ambient Water Monitoring:			
ACTION #5:			
(a) Evaluate the ambient network against national strategy and Regional needs.	National direction has been initiated to redirect monitoring resources to better define the environmental conditions of the Nation's water and to make decisions about regulatory controls to improve water quality. Additionally the BWMP network will be assessed against Regional program needs.	TSB	3rd-4th quarter FY '81
(b) Determine which waterways are important to monitor; link to biological and human health pathways.	Station locations may need to be adjusted in response to program needs.	TSB	3rd-4th quarter FY '81
(c) Determine which control programs/projects will be evaluated; define where "before" & "after" studies will be conducted.	Trend monitoring around major dischargers may necessitate changes to the basic monitoring program.	Water/TSB	3rd quarter FY '81
(d) Provide guidance to states to evaluate their amibent network.	There is a need to reduce the amount of ambient stations not vital to State and Federal needs.	TSB	2nd-4th quarter FY '81

SUMMARY
(continued)

Major Issues & Activities	Rational	Region V Lead Assigment	Schedule
Effluent Monitoring:			
ACTION #6:			
(a) Concentrate compliance monitoring on problem facilities; prioritize annually.	In order to concentrate resources on critical problems, the efforts to monitor non-critical facilities need to be reduced.	ENF	FY '81-82
(b) Develop a procedure for follow-up at facilities exhibiting problems.	The Region needs to use the information generated by DMR's, etc., to screen problems and develop a follow-up procedure to correct the problems.	TSB/ENF	2nd-3rd quarter FY '81
(c) States develop full field and laboratory capabilities for toxic monitoring. Critical "toxic" areas are identified in 106 State Specific Guidance.	More emphasis is going to identification and control of toxic pollution. There needs to be a capability developed in in the States to handle the drive to control these substances.	CRL	FY '82-84
Intensive Surveys:			
ACTION #7:			
(a) Region develops guidelines for States to determine target areas to receive intensive surveys.	The rationale for selection of sites for intensive surveys must be done accord ing to a ranking mechanism set down by the State/Region.	Water/TSB	FY '81

SUMMARY
(continued)

Major Issue & Activities		Rational	Region V Lead Assigment	Schedule
(b)	Determine parameters including biologic and toxic factors.	Parameters mentioned need to be based on scientific needs.	TSB	FY'81
Biological Monitoring:				
ACTION #8:				
(a)	Conduct biological monitoring at specified sites.	Biological information needs to be integrated with monitoring for physical and chemical parameters and is needed at ambient stations, as part of intensive surveys, and in effluent monitoring.	TSB/Water	FY '82
(b)	Implement biological monitoring as part of surveys near toxic sources	Same as above	TSB/ENF	FY '82
(c)	Implement biological monitoring on surveys designed to measure program effectiveness.	Same as above	Water/TSB	FY '82
(d)	Evaluate the use of bioassays and Ames Testing in effluent monitoring.	Need to determine the usefullness of bioassays and Ames Testing as screening tools for further toxic analysis.	CRL	FY '81

SUMMARY
(continued)

Major Issue & Activities	Rational	Region V Lead Assigment	Schedule
Quality Assurance:			
ACTION #9:			
(a) Develop quality assurance programs; develop quality control programs	The States need to complete the approval process for their QA plans. The Regional labs and offices need to submit quality control programs to assure the quality of data generated by them.	QAO Program Offices	FY '81
(b) States report precision and accuracy (P&A) information with quarterly reports when an accpetable system is developed.	Currently there is no (P&A) system that is acceptable; however, when a mechanism is defined that will allow the transfer of this information with data submittal, the States should begin using it.	QAO	FY '82-84
Data Interpretation and Reporting:			
ACTION #10:			
(a) Reexamine the Regional data management system and develop a plan to gain wider acceptance and use of the system for data reporting.	There is not 100% cooperation in the current data management system due in part to a lack of resources and a lack of confidence in the system.	TSB	FY '81-82
(b) Develop means of recording other water quality information.	Much data generated by the States, the Region and HQ are not recorded in a data management system for use by multiple programs.	TSB	FY '81-82

APPENDIX A

PROGRAM NEEDS

PROGRAM NEEDS

This chapter provides a synopsis of the Regional State and National program requirements as they relate to monitoring needs provided primarily through Section 106 program resources. Specific monitoring requirements for each program are listed and a brief statement of the use of this information by the programs office is given.

1. WATER ENFORCEMENT

The Enforcement Division Region V and its state counterparts have a number of program activities which require monitoring data:

a. Compliance

Compliance by NPDES permittees with permit requirements must be determined and effectiveness of State delegated programs in this regard must be assessed. Monitoring activities which support the compliance program include:

1) Compliance sampling inspections
2) Compliance evaluation inspections
3) Performance audit inspections
4) DMR quality assurance inspections
5) Review of self-monitoring data (and validation)
6) Pretreatment inspections
7) Special studies such as fish studies - these are special needs designed to integrate fish tissue analysis data into permit writing to better assess water quality limits for selected industries and municipalities. This includes sampling of fish population and/or long term biomagnification studies of a given effluent or effluents on selected fish species.

The data resulting from these activities are used to determine compliance of individual permittees with permit requirements and, when assessed on a broad basis, to measure effectiveness of State/EPA programs in an attempt to document improvements in point source discharges as a partial objective in attaining improved water quality.

b. Permits

Permits must be written which are effective in meeting the goals of the Clean Water Act (CWA). The permits must meet follow effluent guidelines and if applicable more stringent water quality standards requirements. New and emerging problems, such as toxicants, subject to discharger controls need to be addressed in renewed, revised or modified permits and appropriate limitations and monitoring requirements specified. Monitoring activities which support EPA/State permit writing programs include:

1) Sampling inspections (especially toxics and biomonitoring)
2) Routine compliance activities discussed above
3) Intensive stream studies to identify load allocations
4) Headquarters effluent quidelines monitoring activities
5) Other special studies

The data resulting from these activities are used to assure that permits address identified water quality problems and that permittees are complying with discharge limitations. Routine compliance activities assure new or emerging problems are identified by analyses beyond the strict permit requirements.

2. WATER PLANNING

The 208 and Clean Lakes Programs, paragraphs 2.b. and e. respectively, will not be fundable beginning in FY 1982. Other funding mechanisms will have to be utilized if these programs are to be used in the future.

a. Waste Load Allocation, AST, AWT, Water Quality Standard

In the 201 and 208 program, Waste Load Allocations (WLA) are conducted by the State to establish effluent limitations for treatment more stringent than secondary and to support AST/AWT reviews by EPA. Whether a WLA is conducted by "desk-top" calculations or by using complex computerized mathematical models, some amount of field data is required. This data need is generally satisfied by intensive surveys conducted on at least two occasions, one survey to calibrate and one to verify the model for more complex situations, and less intensive surveys to establish background conditions, re-oxygenation and chemical decay rates for simpler desk-top calculations. The resultant WLA numbers are used to justify facility designs and are placed in the NPDES permit.

Water Quality Standards (WQS) are the baseline against which WLAs and AST/AWT reviews are conducted. There are two components to water quality standards which must be defined by the States and approved by EPA, these are water use classification and water quality criteria. The attainability of the use classification will receive more emphasis than in the past. Data requirements for the WQS setting process include biological surveys and bioassays ambient monitoring and intensive surveys. Information developed pursuant to the data collection and analyses is used frequently to support WQS in quasi-judicial hearings and in more formal enforcement litigation.

b. Nonpoint Source (NPS)

Nonpoint Source pollution is recognized as a major contributer to impaired water quality and is being addressed in the 208 and Great Lakes 104 and 108 programs. Data needs for assessment of NPS pollution studies include intensive surveys to establish cause and effect relationships, ambient monitoring for trend analyses and special surveys for trend analyses on waterways not covered by the ambient network. This information is used for a variety of purposes. It is useful in establishing average annual loads and as a basis for some regulatory and many volunteer nonpoint source control programs.

c. Combined Sewer Overflow (CSO)

Combined sewer overflows are being assessed in many large Region V metropolitan areas as part of the 201 and 208 programs and research and development projects contracted by the Great Lakes National Program Office. Water quality benefits of CSO abatement must be identified and related to various levels of control and costs. Monitoring is accomplished to provide an assessment of existing impact and to provide data for computer simulations of various control systems.

d. Environmental Impact Statements (EIS)

Environmental impact statements generally cover assessments incorporating existing monitoring data. However, the depth of analysis may require intensive surveys, biological surveys, ambient data and special surveys on toxics. The data supports the establishment of environmental trade offs in the EIS and is subject to the public hearing process.

e. Clean Lakes

Section 314 of the CWA addresses the need to clean up our nations lakes. The Clean Lakes Program has some specialized monitoring needs. Remote sensing labs surveys and biological surveys are examples of such data needs. The information from the monitoring program is used to develop lake feasibility studies and lake restoration projects.

f. 305(b) Reports

The State Water Quality Evaluations are required under Section 305 of the Clean Water Act. Water quality evaluations for these reports need all forms of monitoring data. Ambient data from the Basic Water Monitoring Program are very important to establish annual aquatic response information. Toxic surveys are useful for establishing areas especially harmful to human health and the environment. The 305(b) reports are used to inform Congress of the water quality in the nation's waterways. With this information, Congress and the public may better direct environmental programs and resources.

g. Municipal O&M

Section 210 of the Clean Water Act requires EPA to determine the efficiency of the operation and maintenance (O&M) of treatment works constructed with federal grants. Data requirements to accomplish this include routine O&M inspections and compliance evaluation and sampling inspections. This information may be used to evaluate the States' accomplishments in managing the construction grants programs under Section 205 of the Act. An important use has been for support of enforcement actions. A potential use of this information is to evaluate the data against intensive survey information in order to detect water quality standards impact and violations.

h. Drinking Water

Programs for the protection of drinking water have been developed under the Safe Drinking Water Act (SWDA). The primary areas of program activity that require monitoring data are:

1). Compliance determination required by the National Interim Primacy Water Regulations for public water systems. This is done by Region V for public water systems not covered by State primacy programs or cooperating State water supply programs.

2). Investigation of suspected spills or contamination affecting or likely to affect ground water sources of drinking water. Monitoring requirements that support this work are primarily for special case investigations. There is a need, however, for a baseline monitoring inventory to assess ground water quality.

3). Special problems or research need investigations aimed at resolving specific question areas are conducted by both Region V and Headquarters. These investigations require special survey design and non-routine monitoring requirements.

4). Water system evaluations are done by Region V and the States where systems develop water quality problems. Here the data need will frequently be for routine parameters but on a frequency greatly exceeding compliance sampling. The purpose of the sampling is to define problem variability, aid in finding the problem source and indicate problem solutions.

The data resulting from these activities is used to identify compliance with the National Interim Primacy Drinking Water maximum contaminant levels, identify and define water supply problems, and provide technical assistance to communities that have drinking water quality problems. In the future, a monitoring activity may be necessary as part of the Underground Injection Control permit program.

3. HEADQUARTERS

a. Priority Pollutant and Effluent Guidelines Programs

These are Headquarters funded programs that are specific to the EPA Consent Decree priority pollutant mandate, and include exposure/ risk fate assessment dilution studies and effluent guidelines samples. Data gathered as a result of these surveys are designed to track the fate and movement of toxic pollutants through the environment in water, sediment, and fish. Such data should provide useful information to Federal and state permit programs as well as other enforcement and water quality management needs.

b. Hot Spot Studies

These include studies of local area which have high concentrations of toxic pollutants ("hot spots").

4. SOLID WASTE

a. Hazardous Waste Site Investigation

Areas where hazardous wastes migrate into groundwater, streams and/or lakes from waste containment areas require intensive surveys to be conducted, with follow-up short or long term monitoring surveys. These surveys should include water, sediment and biological sampling to assess water quality conditions from the point of discharge and contamination to the zone of recovery.

This is a top priority need in Region V.

b. PCB Investigation

This program need is considered to be significant in Region V in dealing with PCB contamination in water, sediment and fish. The program should concentrate on data collection during manufacturing, marketing and disposal of PCB products.

Much of this need will be met through the Basic Water Monitoring Program. The Priority Pollutant and Effluent Guidelines program will also lend support. Special remedial and mitigation feasibility studies for sediment, plankton, benthos, periphyton and fish contamination have been sponsored by EPA's Office of Marine Activities , the Army Corps of Engineers, States, 208 agencies and the Great Lakes National Program Office.

c. Radiation

The need for a radiation ambient monitoring program is considered to be minimal in terms of the Basis Water Monitoring Program. Nuclear facilities that function under prescribed operational procedures do not generally require a continuous water monitoring program. Monitoring needs are more specific to special studies in response to accidental spills or other emergencies as determined on a case by case basis.

d. Federal Insecticide, Fungicide and Rodenticide Act Inspections (FIFRA)

The Regional monitoring programs related to FIFRA are accomplished through Great Lakes 104 and 108 programs and through 208 nonpoint source activities. Monitoring programs are needed at a level sufficient to identify 1) temporal and spatial trends in concentrations of pesticides; 2) the impact of persistent toxic substances on human health and the quality and health of living acquatic systems and 3) the sources of persistent toxic substances including pesticides.

5. GREAT LAKES NATIONAL PROGRAM OFFICE

The Boundary Waters Treaty (1909) between the U.S. and Great Britain and the Great Lakes Water Quality Agreement of 1972 and 1978 require the federal governments (and states/provinces) to take certain actions to control boundary waters pollution. The actions include monitoring activities or depend upon monitoring activities. General objectives and specific objective are included. The revised (1978) agreement emphasizes toxic substances.

Monitoring activities which support Great Lakes program needs include:

- Whole lake fish monitoring for toxic substances
- Harbor and river mouth fish monitoring for toxic substances
- Sediment surveys for toxic substances in harbors
- Water intake monitoring
- Water intake verification studies
- Supplementary storm event tributary monitoring to improve estimates of loadings to the lakes
- Atmospheric loading network
- Periodic intensive studies of each of the Great Lakes
- Various special studies

These activities are conducted by GLNPO, other EPA programs, states, universities and contractors. The data resulting from these activities are used for input to Great Lakes Water Quality Reports and various special reports of the committees and subcommittees of the IJC. They measure effectiveness of remedial programs, identify the need for further programs, define the quality of the lake ecosystem and identify new and emerging problems.

6. ENVIRONMENTAL QUALITY TRENDS

In order to assess effectiveness of the Clean Water Act to restore and maintain the chemical, physical and biological integrity of the Nation's waters, it is necessary to construct and maintain an environmental profile of these waters. It is further necessary to maintain such profiles on a National, Regional, State and local level so that trends may be established and actions taken on the appropiate level, given the diversity and scope of the problem.

While most monitoring activities will provide data for environmental quality trends or profiles, the following Basic Water Monitoring Program activities directly support the needs:

- Ambient monitorings
- Intensive surveys
- Toxicant monitoring

Toxicant monitoring is especially needed as the current data base has limited toxicants data. There is great concern that many pollutants may cause direct health problems on a cumulative basis and yet there is insufficient information about the occurrence of these materials in the environment. The data from the monitoring activities will be used to establish baseline profiles and subsequently used to measure progress of remedial programs, or identify the need for additional remedial programs.

7. DREDGE & FILL PROGRAM

Section 404 of the CWA requires the Secretary of Army to require permits for dredge and fill operations in navigable waters. In the past, certain harbor sediments have been found unsuitable for open lake disposal and must be instead placed upland or in confined sites. The Administrator is authorized to prohibit the specification of any defined area if the discharge of materials will have an adverse impact on municipal water supplies, shellfish beds and fishery areas, wildlife or recreation areas. Monitoring of the bottom sediments and waters is conducted to provide data upon which to base decisions.

8. ENVIRONMENTAL RESEARCH LAB-DULUTH (ERL-D)

The purpose of the Duluth Laboratoey is to develop and apply test methods to evaluate how pollution affects the plants and animals living in lakes, rivers and streams. While early efforts pioneered research on the effects of pollution on (fresh water) aquatic life, the current effort is moving towards an understanding of how pollution affects human health and well being. While much of the work is of a "research" nature, many activities provide important water monitoring data such as the analysis of various fish in the Great Lakes for a broad scan of toxicants.

9. LARGE LAKES RESEARCH STATION GROSSE-ILE (LLRS)

LLRS is an arm of ERL-D. Its mission is the study of large lakes such as the Great Lakes. Initial activities were directed toward modeling of eutrophication mechanisms, especially in Saginaw Bay. Ephasis is now placed on the fate of toxicants in large lakes, with Saginaw Bay as the focal point. Areas under sudy include atmosperic deposition of toxicants such as PCBs. Much of the effort is int testing predictive models against "real" field data.

APPENDIX B

SYNOPSIS OF WATER MONITORING ACTIVITIES

SYNOPOSIS OF WATER MONITORING ACTIVTIES

1. BASIC WATER MONITORING PROGRAM

a. Introduction

The Basic Water Monitoring Program was developed as a tool to bring about standardization in state monitoring programs to assess ambient water quality.

b. Objectives

1) Stabilize state programs.

2) Improve the effectiveness of State and EPA programs and reduce duplication of effort.

3) Ensure that fundamental data needs are met.

4) Makes the best use of existing resources and technology

c. Program Description

The basic program contains six major elements. These are the ambient monitoring program, intensive survey program, effluent monitoring program, proposed biological monitoring program, quality assurance and data interpretation and reporting.

1) Ambient Monitoring Program

The ambient monitoring program is viewed as the core of the basic program. The goal of the national program was to establish a network of not less than 1000 stations selected as a subset of the total network which existed in 1977. In Region V, a total of 185 stations were selected to provide the trend information needed nationally to assess the adequacy of pollution control programs. At each station, minimum parameter coverage and sampling frequency were established. Those which apply to Region V are described below. These include all parameters detailed in the program document except those for estuaries and other salt water areas. Station selection was to be in the following water use areas: recreational, commercial or sports fishery and populated areas. Representative sampling of these different water areas was to be obtained regionally, including clean water areas. The minimum parameter list and sampling frequency are described in Table 1.

TABLE 1
MINIMUM PARAMETER LIST AND SAMPLING FREQUENCY

Parameter (units)	Sampling Frequency
RIVERS AND STREAMS	
Temperature (°C)	Monthly
Dissolved oxygen (mg/l)	"
pH (standard units)	"
Conductivity (umhos/cm @ 25°C)	"
Fecal coliform (#/100 ml)	"
Total kjeldahl nitrogen (mg/l)	Monthly
Nitrate + nitrite (mg/l)	"
Total phosphorus (mg/l)	"
Chemical oxygen demand (mg/l)	"
Total suspended solids (mg/l)	"
Representative fish tissue analysis (See Table 2)	Annually
Flow (CFS)	Monthly

LAKES AND IMPOUNDMENTS, INCLUDING THE GREAT LAKES

All of the above except chemical oxygen demand and flow. In addition, the following parameter will be monitored.

Transparency, Secchi disc (meters)	Seasonally

Fish tissue samples are to be analyzed for the parameters listed in Appendix A. Where fish tissue analysis indicates a high concentration of a particular toxicant (s), sediment samples are to be collected for analysis.

TABLE 2
TRACE ORGANIC AND METALS ANALYSIS FOR FISH TISSUE AND SEDIMENTS

PARAMETER	TISSUE	SEDIMENTS
PCBs	(mg/kg/ug/g)	(ug/kg)
Aldrin		
Dieldrin		
Total DDT		
O,p DDE		
p,p DDE		
O,p DDD		
p,p DDD		
O,p DDT		
p,p DDT		
Chlordane		

TABLE 2 (Cont'd)
TRACE ORGANIC AND METAL ANALYSIS FOR FISH TISSUE AND SEDIMENTS

PARAMETER	TISSUE	SEDIMENTS
cis isomer of chlordane	(mg/kg/ug/g)	(ug/kg)
trans isomer of chlordane		
cis isomer of nonachlor		
trans isomer of nonachlor		
Endrin		
Methoxychlor		
Hexachlorbenzene		
Pentachlorophenol		
Hexachlorocyclohexane		
alpha BHC isomer		
gamma isomer		
Arsenic		
Cadmium		
Chromium		
Copper		
Mercury		
Lead		

If, in addition to the fish tissue samples, the sediment samples also reveal high concentrations, grab samples from the water column should be collected and analyzed.

a). Sample Collection and Analysis

Rivers - one representative water sample should be collected

Lakes - in homogeneous lakes and impoundments, one representative sample should be collected. If stratified, one sample should be collected from each stratum.

Fish samples - representative fish samples (not to include migratory fish) should be collected in the fall and analyzed according to established documentation. Two replicate whole fish composite samples of a bottom feeder and one whole fish composite sample of a predator species should be collected at each station (particularlly those fish which are commercially or recreationally important). Each composite should include at least five fish of approximately the same size.

b). Tissue Banking

After sample aliquots are analyzed for the parameters listed in Table 2, the remainder of the tissue sample should be stored for additonal analysis as described in the basic document.

The minimum sampling required in the basic program is intended to provide trend data and to surface water quality problems. Any detailed monitoring required to quantitate problems in lakes, impoundments and stream will be accomplished through intensive surveys.

2). Intensive Survey Program

A program of intensive water quality investigations of high priority streams, lakes and impoundments should be conducted to address specific issues such as cause-effect relationships, waste load allocations and water quality standards assessments. Other uses of intensive surveys include evaluation of station siting, facilitate interpretation of ambient station data and, most importantly, as a mechanism to improve resource management. As a goal, an intensive survey to be conducted at least once within five years on every river and lake where waste loads are allocated or significant water quality changes are identified or considered probable. Specific surveys are to be identified annually by the States in cooperation with the Regional offices through annual revisions to the five year plan for intensive surveys.

a) Scope of Investigations

Although specific details are unique to the individual survey and governed by the objectives of the survey, certain features should be common to all intensive surveys as follows.

1. Improve interpretation of existing data
2. Improve the use of mathematical models.
3. Account for the effects of all significant point sources impacting the study area.
4. Include an assessment of the distribution and accumulation of toxic substances.
5. Begin with an assessment of available data
6. Include an assessment of the attainment status of the 1983"fishable-swimmable" water quality goal.

b) Intensive Survey Abstract

For each intensive survey conducted, the state should prepare an abstract describing the survey area and summary of the results of the survey and forward a copy of the abstract to the Regional office. The interpretation of intensive survey data should be the basis for the Section 305 (b) Report.

3). Effluent Monitoring Program

The effluent monitoring program is administered through the NPDES permit program for discharge into navigable waters. In support of the NPDES program, compliance monitoring data is collected. Specifically, compliance monitoring means measuring and analyzing pollutant sources and reviewing reports and information obtained from discharges.

Compliance review is the review of all written material relating to the status of compliance with an NPDES permit. If a state does not have NPDES authority, compliance review is the responsibility of the Regional Office.

Compliance inspection includes all field related activities conducted to determine the status of compliance with permit requirements. In Region V, these inspections are conducted both by the States and the Surveillance and Analysis Division and include evaluations (non-sampling), sampling inspections and facility inspections.

a). Basic Effluent Monitoring Program Specifications

The goals of this program are the following. These goals are a joint effort to be achieved by the States and the Regional Office.

1. Sampling inspections annually at all existing major permittees.
2. Evaluations completed annually at major permittees that are under construction or have previously demonstrated compliance.
3. Examination of permitees quality control procedures.
4. Coordination, where practical, of sampling inspections as part of intensive surveys.

b). Sample Collection and Handling

In those inspections where samples are being collected, particularly those to be used as evidence, the integrity of the sample must be guarded and thoroughly documented through chain-of-custody procedures. Information on these procedures is available from the Quality Assurance Office, Surveillance and Analysis Division.

4). Proposed Biological Monitoring Program

This program was included as a pilot. It is not a part of the basic program; however, all States were encouraged to implement this proposed program on a trial basis.

Biomonitoring is defined as "The determination of the effects on aquatic life, including the accumulation of pollutants in tissue, in receiving waters due to the discharge of pollutants." The objective of this proposed program is to begin to define the relationship between chemical/physical monitoring at selected points and biological monitoring in the areas surrounding those points.

a). Station Selection

Wherever possible, biological stations should be located near ambient monitoring stations. However, since a biological station will often encompass broad areas, rather than points, within a river or lake, it is advisable to avoid areas which have been altered by structures. Once established, each biological monitoring station must be documented as follows.

1. Completed National Ambient Monitoring Description Form. This form should also be used to describe special station characteristics such as parametric fluctuations.
2. A state map depicting station location is also required.

b). Parameter Coverage and Sampling Frequency

The parameter list, sampling season, frequency and methods are described in Table 3.

TABLE 3
PARAMETER LIST AND SAMPLING FREQUENCY

PARAMETERS	PLANKTON	PERIPHYTON	MACROINVERTEBRATES	FISH
Counts			X	
Species Identification			X	X
Biomass (ash-free water)		X		
Chlorophyll a	X	X		
Toxic substances				X
HABITAT TYPES				
Rivers		X	X	X
Lakes	X	X	X	X
SAMPLING METHODS				
Sampling season	6/15-9/15	6/15-9/15	6/15-9/15	6/15-9/15
" frequency	monthly	annually	annually	annually
" method	grab	glass slides floating sampler	Hester-Dendy Multiplate	
No. replicate samples	3	3	3	

5) Quality Assurance

Agency policy and regulations requires participation by States in a centrally managed quality assurance program includes all monitoring and measurement activities. "Quality Assurance" (QA) is defined as a States' total program for assuring the reliability of data it produces. A QA program is a document presenting the policies, objectives, management structure, and general procedures which comprise this total program. The QA program must describe how all data generated will be assessed for accuracy, precision, completeness, representativeness, and comparability. The QA program must require that monitoring data be accompanied by a calculation of precision and accuracy to the data user. A statement on the completeness, representativeness, and comparability should be provided the data user.

6) Data Interpretation and Reporting

Using the Section 305 (b) reporting process, states are responsible for reporting information on the quality of their waters. This includes current water quality relative to the 1983 goals, projected water quality following implementation of point source controls, a description of the nature and extent of nonpoint source problems and an assessment of the economic and social costs and benefits of achieving the goals of the Clean Water Act. Summaries of these reports along with the national ambient data analysis will be used to describe water quality on a national level to Congress.

Ambient and source data shall be made available for use nationally through existing data storage and retrieval systems.

a). Ambient Data
EPA requires its offices and encourages the States to submit their ambient data for storage in STORET. If a State does not desire to use STORET, the ambient data should be submitted to the Regional Office in a STORET compatible format on a quarterly basis.

b). Effluent Data

The State should submit to the Regional Office on a quarterly basis an abstract containing the following:

1. The number, name and date of each sampling inspection of a major permitee.
2. The number, name and date of each compliance evaluation inspection of a major permittee.

c). Intensive Survey Data

For each intensive survey conducted, the State should prepare an abstract describing the survey area and summary of the results. These abstracts should be forwarded to the Region Office upon completion and are to be maintained in basin files by the Region to serve as reference on the water quality and discharge conditions in each basin.

2. GREAT LAKES PROGRAM

The Great Lakes, their connecting channels and tributaries are a dynamic and complex fresh water eco-system, largest in surface area in the world. They serve a population of some 37 million in two countries, eight states and one province. Because of its size and uniqueness, a separate Great Lakes National Program Office has been developed for the management of this resource. Water monitoring activities in the States, as well as other Federal programs, support the Great Lakes strategy. A coordinated Great Lakes International Surveillance Plan has been developed under the sponsorship of the International Joint Commision to fulfill the requirements of the Great Lakes Water Quality Agreement of 1978. Data obtained from the surveillance program will be interpreted to determine the state of compliance with control requirements, evaluate the effectiveness of remedial actions that have been taken, identify emerging problems, and identify the need for special studies to improve the understanding of phenomena and/or trends observed as a result of the surveillance programs.

The overall surveillance plan includes:

a. Open lake intensive survey.

Open lake intensive surveys are detailed assessments of ecological conditions within the lakes performed on an average of once every five years on each lake. These assessments are used to detect trends in the lakes, detect emerging problems and to determine the lakes response to existing remedial programs. Data from these assessments are used, together with all loading data, to develop, calibrate and verify mathematical simulations of the lakes' biological response to remedial programs and to predict the effect of various phosphorus management policy options.

b. Loadings.

Annual loadings of nutrients, metals and toxic substances to the lakes are required as inputs to the mathematical simulations and as a direct assessment of remedial programs designed to reduce loadings. Loadings come from tributaries, direct point source discharges, the atmosphere and non-point source discharges.

1. Atmospheric Deposition is determined annually by a series of bulk and wet deposition samples located on islands or on the shorelines of the lakes.

2. Tributary Storm Event Monitoring: The high flow monitoring supplements the state monthly ambient monitoring and provides a more accurate estimate of annual riverine loadings to the lakes.

3. Tributary and Point Source Inputs (Phosphorus Management): States conduct monthly monitoring on major tributaries and selected major point source dischargers in order to provide data for calculating annual loadings to the lakes. This

loading data, together with the open lake monitoring data, is used to evaluate ongoing and alternative management programs.

Minimum monthly parameters required for Great Lakes tributaries (beyond the River and Stream parameter list shown on page 32) are:

Flow (CFS)
Lead (ug/l)
Calcium (mg/l)
Sodium (mg/l)
Chloride (mg/l)
Sulfate (mg/l)
PCB's (ug/l) (using low level detection)
Dissolved reactive silicate (mg/l)
Fish tissue contaminat trend analysis where significant problems are identified (annual)

4. Rivermouths, Embayments and Nearshore Studies

Intensive nearshore water quality studies have been implemented in several areas to determine compliance with State and IJC water quality programs.

c. Fish monitoring.

Monitoring fish for toxic substances provides information for advising the public on fish consumption, effectiveness of remedial actions to control toxicants, and to detect new toxic substances accumulating in environment.

d. Sediment monitoring.

The sediment monitoring program is intended to find areas where high concentrations of toxic substances may exist within sediment. Such findings will also strongly indicate probable sources of contamination to the water column and biota.

e. Water intake and annual lake monitoring.

This monitoring is used to provide a minimum of yearly information on each lake, which information can then be used to detect dramatic shortterm changes in water quality. It is also used to place the results of intensive open lake surveys in perspective.

f. Support to other Federal Programs.

Examples of these interests include industrial process evaluation, enforcement case development and research, especially as related to toxic contaminants. Monitoring activities in support of these interests include.

1). O&M inspections of facilities located on tributaries
2). Fugitive emissions
3). Fish monitoring for priority pollutants
4). PCB evaluations

3. SECTION 208, AREAWIDE WASTE TREATMENT MANAGEMENT

For the purpose of encouraging and facilitating the development and implementation of areawide waste treatment management plans, Section 208 of the Clean Water Act, as amended, authorizes the Administrator to identify areas which have substantial water quality problems as a result of urban industrial concentrations, or other factors, with subsequent designation by State Governors of agencies and boundaries of the '208' area. The 208 agencies could then receive grants for management plans to solve the pollution problems. The Act required the plans to include many specific items. Among these are identification of sources of pollution from a variety of dischargers point, nonpoint, mine-related, construction, salt water infusion, residual wastes, land and subsurface disposal. Plans are to include alternatives and be applicable to all wastes generated within the area involved. The 1977 Amendments to PL 92-500 add certain requirements with regard to discharge or placement of dredge and fill material in the area. The process is cited in the law as a "continuing. . . planing process", thus subject to periodic review and update. 208 agencies in Region V have been involved in a number of water monitoring activities and continue to be so. These have included monitoring activities similar to Federal and state efforts which are part of the BWMP described earlier. A number of 208 agencies have established water quality boards which may be expected to conduct or direct routine water monitoring efforts for their own needs in the future. Some agencies have or are conducting specialized studies such as the West Michigan Shoreline RDC, Region 14 - Muskegon County Surface Toxics Study and the proposed East Central Michigan Planning and Development Region 7 study on toxics in the fish, sediment and water of the Pine and Saginaw Rivers.

4. HEADQUARTERS PROGRAMS

Various sections of the Clean Water Act and judicial actions such as the NRDC Consent Decree require the Administrator to conduct activities which are of a water monitoring nature, support water monitoring or depend on the conduct of water monitoring by others. In order to fully satisfy the CWA requirements, certain monitoring must of necessity be conducted on a national scope, even though occurring within a Region, State or local area. Among these programs are:

a. Effluent Guidelines Activities - Section 304(b) of The Clean Water Act requires the Administrator to publish requlations regarding levels of treatment for various classes and categories of point sources in two phases - best practicable control technology (BPT) and best available control technology (BAT). Section 307 requires the publication of toxic pullutant limitations. Judicial requirements, namely the NRDC Consent Judgment, require certain additional actions with regard to "priority pollutants". To accomplish these tasks certain water monitoring programs have been instituted including Fate, Exposure/Risk, Dilution, Effluent/ Process Monitoring and local problem identification. These monitoring activites are conducted by EPA, State or contractor sampling/analysis efforts and are basically directed to toxics monitoring. Exposure/ Risk, Fate and Dilution Studies are required under Paragraph 12 of the EPA/NRDC Consent Decree. Exposure/Risk Studies evaluate levels of priority pollutants in the environment which may affect human health or aquatic life. Fate Studies determine fate of priority pollutants once they have entered the environment. Dilution Studies identify specific areas where BAT will not result in attainment of water quality criteria for toxic pollutants. Effluent/Process Monitoring determines priority pollutant levels in plant effluents and process water to assist in developing BAT guidelines. Local problem identification investigations determine the extent and sources of local contamination from priority pollutants.

b. Hot Spot Studies-include identification, priorization and study of local areas which have high concentrations of toxic pollutants ("hot spots") in order to develop control strategies required by paragraph 12 of the NRDC settlement agreement.

c. POTW/Toxics Project - designed to collect data on toxics in POTW's to help develop a strategy for pretreatment for revision of BPWTT by intensive sampling in a small number of representative cities. There are 20-30 studies throughout the country.

5. OPERATION AND MAINTENANCE (O&M) PROGRAM

Each State within Region V operates its own O&M Program. Although the programs vary from state to state, certain elements are required by EPA for reporting purposes. These are: construction grant compliance inspections conducted and reported on Form 7500; O&M inspections conducted and reported on Form 7500; O&M inspections conducted and not reported on Form 7500; follow-up inspections conducted; and technical assistance provided. In addition, the States provide review of O&M manuals prepared for treatment plants in their respective areas of jurisdiction. In those areas where the States cannot meet their commitments due to lack of resources, the U.S. EPA has been providing limited supplemental assistance. Also, the Corps of Engineers has been conducting periodic inspections of plants during construction for Federally funded projects.

6. RCRA PROGRAM

The RCRA Program is now being implemented in its various phases to provide cradle to grave control of hazardous materials. Monitoring activities include inspection of generators, transporters, storers, treaters and disposers of hazardous wastes. Permits and manifest systems will provide better tracking of the fate of toxic chemicals.

7. DRINKING WATER PROGRAM

The Safe Drinking Water Act (SDWA) requires monitoring by public water systems. Specialized analyses, including organics, are required of the larger systems. Only treated water analyses are required. However, the surveillance authorities (State and Federal) and the public water systems frequently require raw water and other data beyond the SDWA required monitoring. Such data taken from ambient surface water intakes and ground waters may be used in defining environmental quality.

8. DREDGE & FILL PROGRAM

Section 404 of the CWA requires the Secretary of Army to require permits for dredge and fill operations in navigable waters. In the past, certain harbor sediments have been found unsuitable for open lake disposal and must be instead placed upland or in confined sites. The Administrator is authorized to prohibit the specification of any defined area if the discharge of materials will have an adverse impact on municipal water supplies, shellfish beds and fishery areas, wildlife or recreation areas. Monitoring of the bottom sediments and waters is conducted to provide data upon which to base decisions.

9. ENVIRONMENTAL RESEARCH LAB-DULUTH (ERL-D)

The purpose of the Duluth Laboratory is to develop and apply test methods to evaluate how pollution affects the plants and animals living in lakes, rivers and streams. While early efforts pioneered research on the effects of pollution on (fresh water) aquatic life, the current effort is moving towards an understanding of how pollution affects human health and well being. While much of the work is of a "research" nature, many activities provide important water monitoring data such as the analysis of various fish in the Great Lakes for a broad scan of toxicants.

10. LARGE LAKES RESEARCH STATION GROSSE-ILE (LLRS)

LLRS is an arm of ERL-D. Its mission is the study of large lakes such as the Great Lakes. Initial activities were directed towards modeling of eutrophication mechanisms, especially in Saginaw Bay. Emphasis is now placed on the fate of toxicants in large lakes, with Saginaw Bay as the focal point. Areas under study include atmospheric deposition of toxicants such as PCBs. Much of the effort is in testing predictive models against "real" field data.

APPENDIX C

ASSESSMENT OF REGION WATER MONITORING

ASSESSMENT OF REGION WATER MONITORING ACTIVITIES

1. BASIC WATER MONITORING PROGRAM, STATE ACTIVITIES

Each of the six states comprising Region V and the Federal monitoring entities located within the Region were evaluated with respect to the basic program. The result of these evaluations are described in succeeding paragraphs. The total monitoring effort in the Region, or even in any of the states, is widespread and very complex. To describe this effort, liberal use is made of tables and figures to detail the ambient monitoring being done. For each state, the basic network is displayed in a figure and tabulated by station listing. Figures are used to describe all of the networks. The figures consist of base maps of the states showing the principal streams and rivers, public water supply intakes and all of the major dischargers in existance in 1979. To display the various networks, overlays are used with the base maps. Several networks may be displayed on one map. In this instance, the different networks are keyed for clarity. On all maps, the major dischargers are also keyed by type and number. The number of each discharger is from a list of major dischargers described in the appendices. Each state assessment begins with an overview which summarizes the findings of the evaluation relative to the basic program. These findings are also summarized in a Table 13 following this section.

a. ILLINOIS

1). Overview

In the State of Illinois there are three agencies involved in ambient monitoring. They are the Illinois Environmental Protection Agency (IEPA), the U.S. Geological Survey (USGS) and the U.S. Army Corps of Engineers (COE). While the coverage provided by these networks meets the explicit intent of the Basic Monitoring Program. The intent of the basic program is to provide a data base which is representative of national water quality and trends. Within the coverage provided by these networks, there is no duplication considering sampling parameters and frequency. Illinois' basic program has minor deficiencies in the areas of quality assurance and data interpretation and reporting.

2). Assessment of the State Monitoring Program

The Illinois Environmental Protection Agency operates two fixed station networks: the National Ambient Network, consisting of 41 stations, and a State Monitoring Network consisting of 167 stations. Additionally, the USGS operates three networks of stations, and the U.S. Army Corps of Engineers operates a network. These networks are presented in Figures 1 thru 3. An evaluation of each of these networks is presented below.

In addition to the monitoring networks and the programs mentioned above, the following programs are also evaluated: intensive surveys, effluent monitoring and the proposed biological monitoring program.

a). National Ambient Monitoring Network

The National Ambient Monitoring Network is comprised of 41 stations and is operated by the IEPA. Parameter coverage and sampling frequency appear to be in accordance with the requirements of the Basic Water Monitoring Program; however, this is difficult to verify because a STORET retrieval of 13 stations has revealed that not all data have been entered into the STORET system. Additonally parameters are also analyzed as indicated in Attachment 1. A listing of the stations is presented in Table 1 below:

TABLE 1
NATIONAL AMBIENT MONITORING STATIONS - ILLINOIS

Location	Station Number
Big Muddy River	NI2
Calumet - Sag Channel	HOI
Casey Fork	NJ07
Chicago Sanitary and Ship Canal	GI02
Desplaines River	GI5
Fox River	DT35
Fox River	DT38
Fox River	DT46
Green River	PB04
Illinois River	D05
Illinois River	D23
Illinois River	D30
Illinois River	D32
Kankakee River	F01
Kankakee River	F02
Kaskaskia River	002
Kaskaskia River	008
Kaskaskia River	030
Lake Michigan	5A
Lake Michigan	5H
Lake Michigan	5J
La Moine River	DG01
Little Calumet River	HB42
Lusk Creek	AK02
Middle Fork Saline River	ATB03
Mississippi River	J83
Mississippi River	K04
Mississippi River	M04
North Fork Saline River	ATF04
Ohio River	A06
Rock River	P15
Salt Creek	GL09
Sangamon River	E25
Sangamon River	E26
Sangamon River	E28
South Fork Saline River	ATH05
Vermillion River	BP01
Wabash River	B07
Little Wabash River	C20
West Branch Chicago River	HCC07

These stations are shown in Figure 1. Description forms have been submitted for each designated station.

Illinois is one of the few states in the Region which has a toxics program similar to that specified in the basic program. As part of the biological program described in paragraph 3a (7), fish samples are collected at 38 of the 41 core stations and analyzed for the toxics listed in the basic program.

(b) State Monitoring Network

The State Monitoring Network consists of 167 stations operated by the IEPA. These are spread over the state so that most major river basins are covered. According to the state, the parameter coverage and frequency of sampling meet the requirements of the Basic Water Monitoring Program. Additional parameters are also analyzed as indicated in Attachment 1. These stations are shown in Figure 2. ORSANCO monitoring stations along the Ohio River are supported in part by the State. An evaluation of this effort is not included in the report.

(c) USGS Monitoring Networks

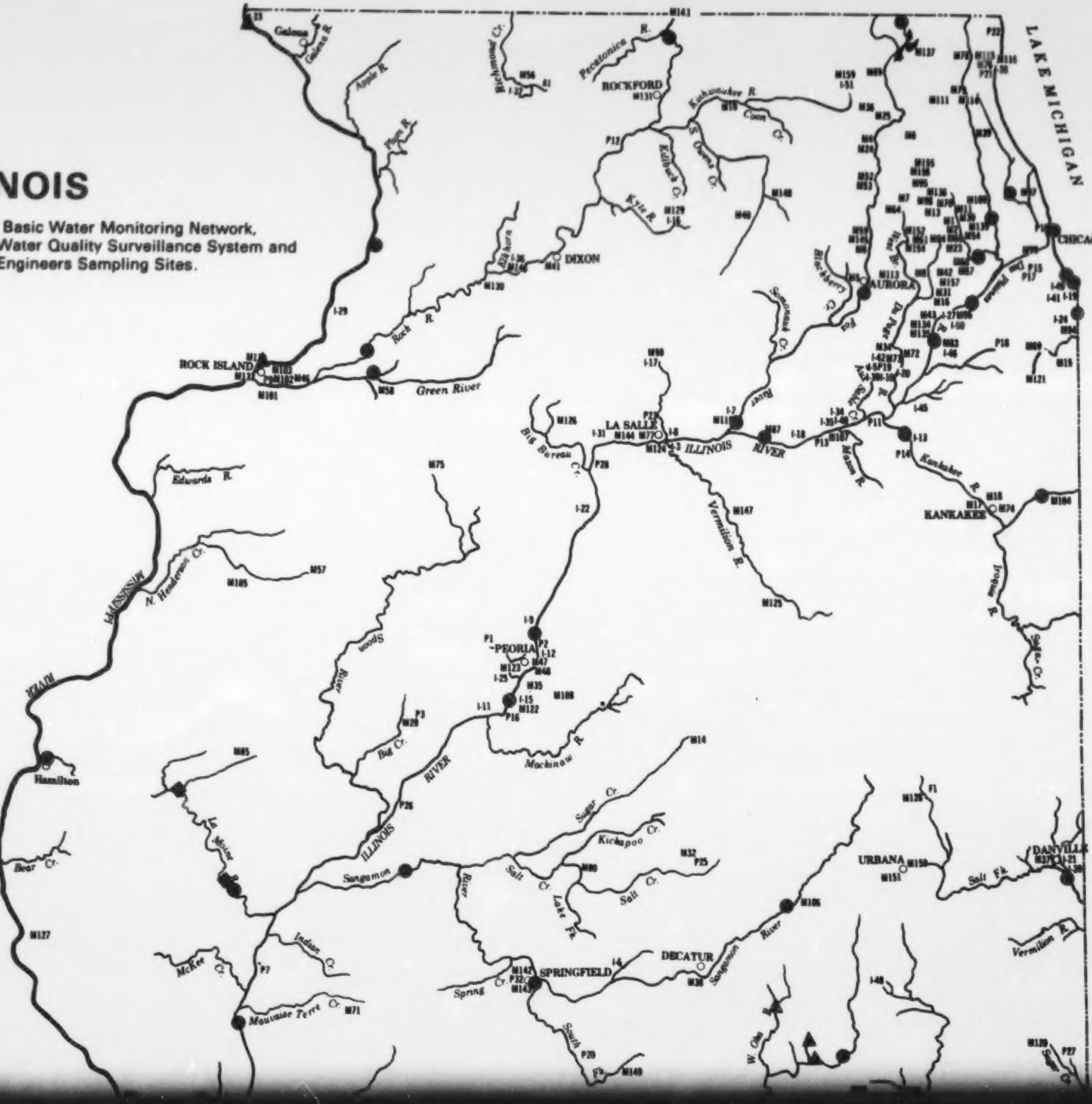
The USGS operates three networks in Illinois. These are the (1) National Stream Quality Accounting Network (NASQAN), consisting of 13 stations, (2) a USGS ambient water quality monitoring network consisting of a total of nine stations of which six stations have samples collected by USGS but analyzed by the Illinois State Water Survey Laboratory, two stations are on a special monitoring project in Fulton County, one station is on the Little Calumet River at the Illinois-Indiana state line at Munster, Indiana, where samples are collected by the USGS but analyzed by the Indiana State Board of Health, and (3) two stations are National Water Quality Surveillance System (NWQSS) stations located on the LaMoine River. Some of the USGS stations also serve as National Ambient Monitoring Stations (Core). According to information provided by the State, parameter coverage and frequency of sampling satisfy the requirements of the Basic Water Monitoring Program. Additional parameters are also analyzed as indicated in Attachment 1. These stations are shown in Figures 1 and 3.

(d) U.S. Army Corps of Engineers Monitoring Network

The U.S. Army Corps of Engineers operates a network consisting of 14 stations in Illinois. Their monitoring network is designed primarily to measure water quality flowing into and out of the reservoirs created by the Corps for public uses. Whereas the parameter coverage and sampling frequency do not necessarily conform to the Basic Water Monitoring Network, this monitoring is done for special purposes and is not permanent. These stations are shown in Figure 1.

ILLINOIS

Figure 1: Basic Water Monitoring Network, National Water Quality Surveillance System and Corps of Engineers Sampling Sites.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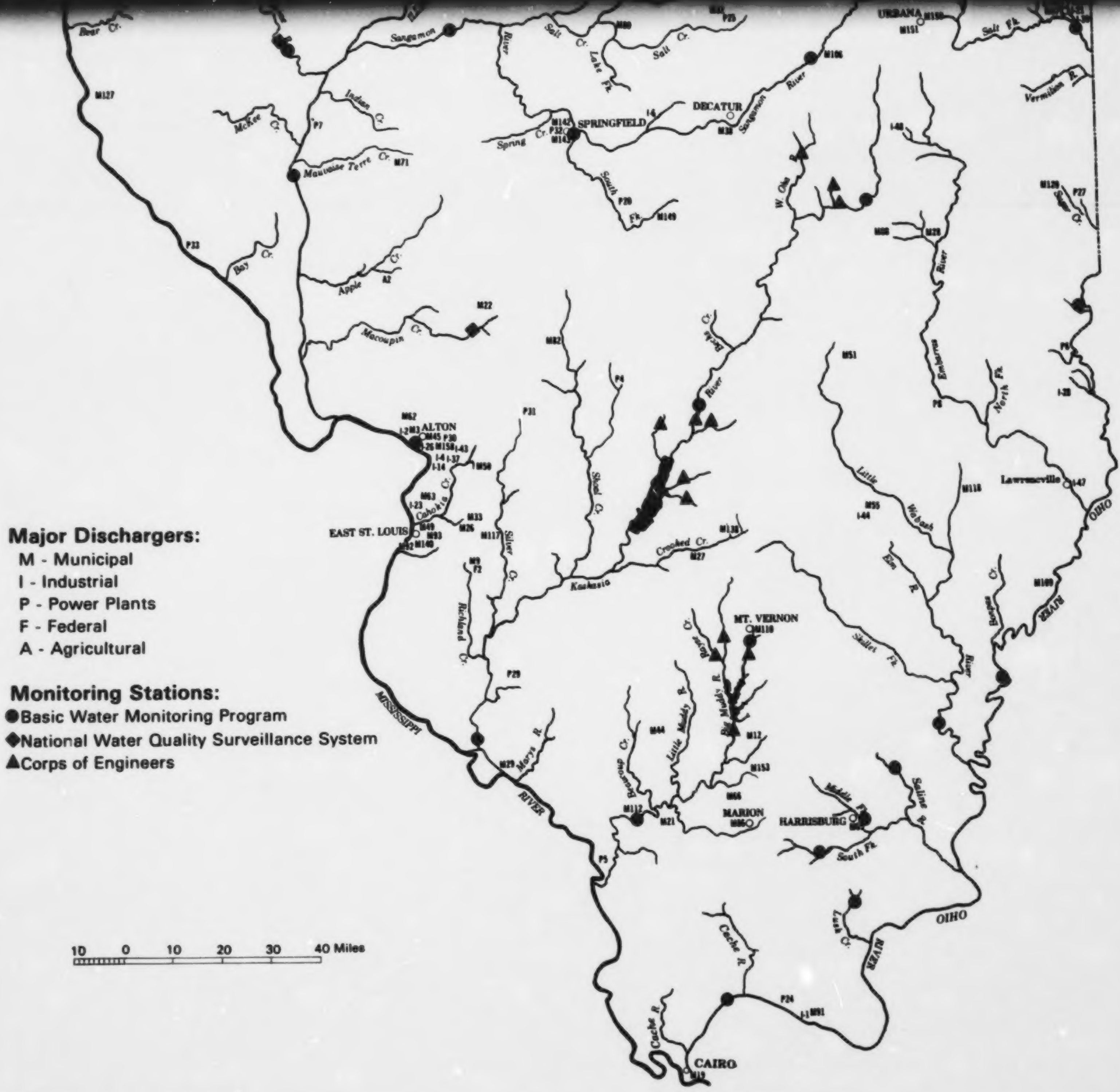
CHICAGO
Galena
Galena R.
Apple R.
Plum R.
Richmond Cr.
Pecatonica R.
ROCKFORD
Kishwaukee R.
Coon Cr.
S. Owens Cr.
Killbuck Cr.
Kyte R.
DIXON
Elkhorn
Rock R.
ROCK ISLAND
Green River
AURORA
West Br.
Du Page R.
Des Plaines R.
Blackberry Cr.
Fox River
Somonauk Cr.
Sable Cr.
Mazon R.
Kankakee R.
KANKAKEE
Iroquois R.
Sugar Cr.
LA SALLE
ILLINOIS RIVER
Big Bureau Cr.
Vermilion R.
Edwards R.
N. Henderson Cr.
Spoon River
PEORIA
Big Cr.
Mackinaw R.
MISSISSIPPI RIVER
Hamilton
Bear Cr.
La Moine R.
Sugar Cr.
Kickapoo Cr.
Salt Cr.
Lake Fk.
Sangamon River
Indian Cr.
McKee Cr.
Mauvaise Terre Cr.
SPRINGFIELD
Spring Cr.
South Fk.
DECATUR
URBANA
DANVILLE
Salt Fk.
Vermilion R.
W. Okaw R.


Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
A - Agricultural
Monitoring Stations:
●Basic Water Monitoring Program
◆National Water Quality Surveillance System
▲Corps of Engineers
10 0 10 20 30 40 Miles
URBANA
SPRINGFIELD
DECATUR
ALTON
EAST ST. LOUIS
MT. VERNON
MARION
HARRISBURG
CAIRO
Lawrenceville
MISSISSIPPI
RIVER
OHIO
RIVER
Sangamon
Sangamon River
Salt Cr.
Lake Fk.
Salt Fk.
Vermilion R.
Sugar Cr.
Bear Cr.
McKee Cr.
Indian Cr.
Mauvaise Terre Cr.
Spring Cr.
South Fk.
W. Okaw R.
Bay Cr.
Apple Cr.
Macoupin Cr.
Cahokia Cr.
Silver Cr.
Shoal Cr.
Richland Cr.
Beck Cr.
Kaskaskia
River
Crooked Cr.
Marys R.
Beaucoup Cr.
Little Muddy R.
Big Muddy R.
Casey Cr.
Little Wabash
Elm R.
Skillet Fk.
Embarras
River
North Fk.
Bonpas Cr.
Saline R.
Middle Fk.
South Fk.
Lusk Cr.
Cache R.
M127
P7
M71
P33
A2
M22
M62
I-2
M83
M45
P30
I-26
M158
I-43
I-4
I-37
I-14
M50
M63
I-23
M49
M93
M52
M140
M33
M26
M117
M9
F2
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M82
P4
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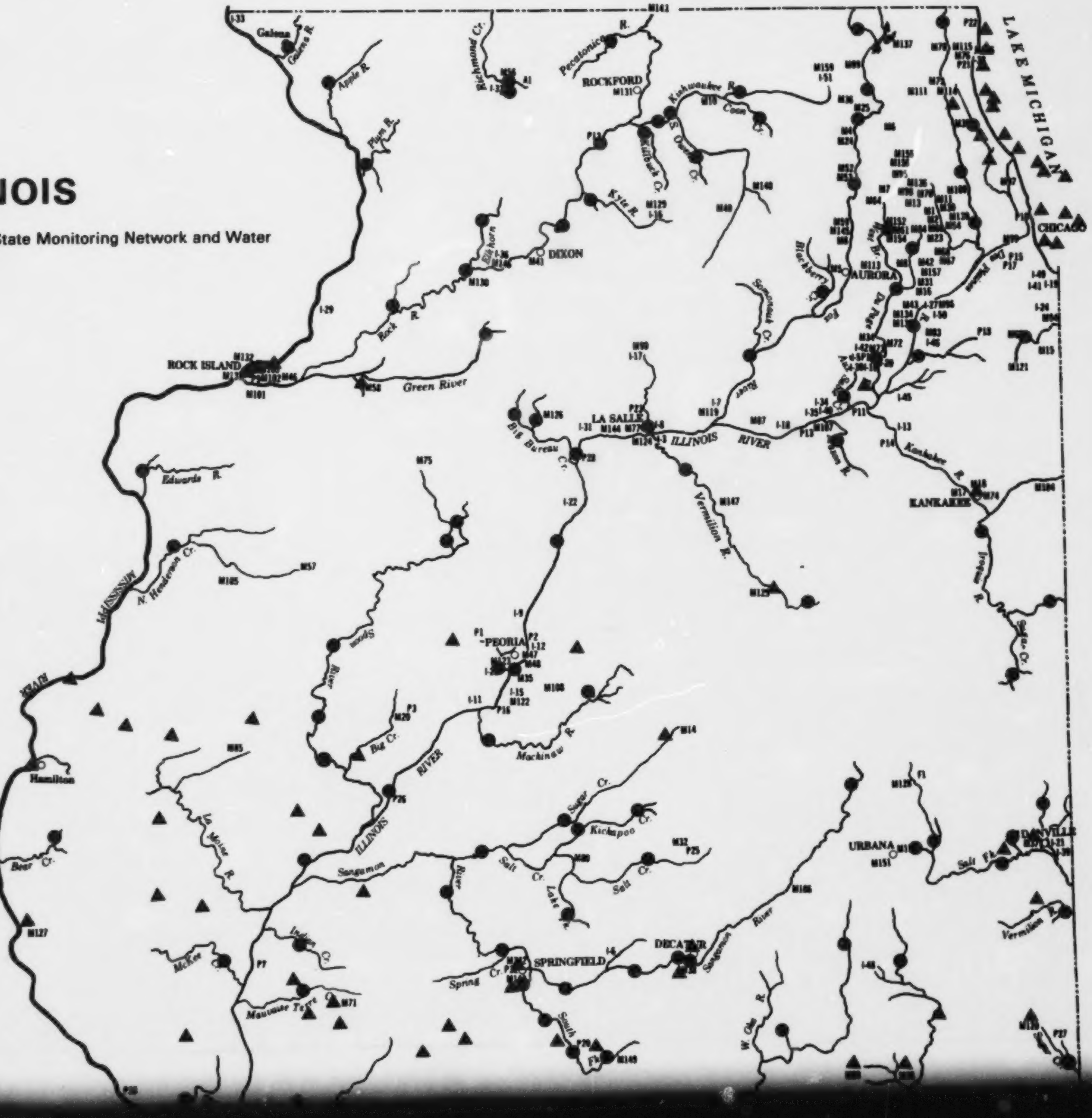
M29
P5
M112
M21
M44
M12
M153
M66
M86
M110
M138
M27
M142
P32
M143
I-4
M38
P20
M149
M80
P25
M106
M150
M151
I-40
M60
M28
M51
P6
M116
M55
I-44
M129
P27
I-20
I-47
M100
M84
P24
I-1
M91
M19

ILLINOIS

Figure 2: State Monitoring Network and Water Intakes.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LA SALLE
KANKAKEE
ROCK ISLAND
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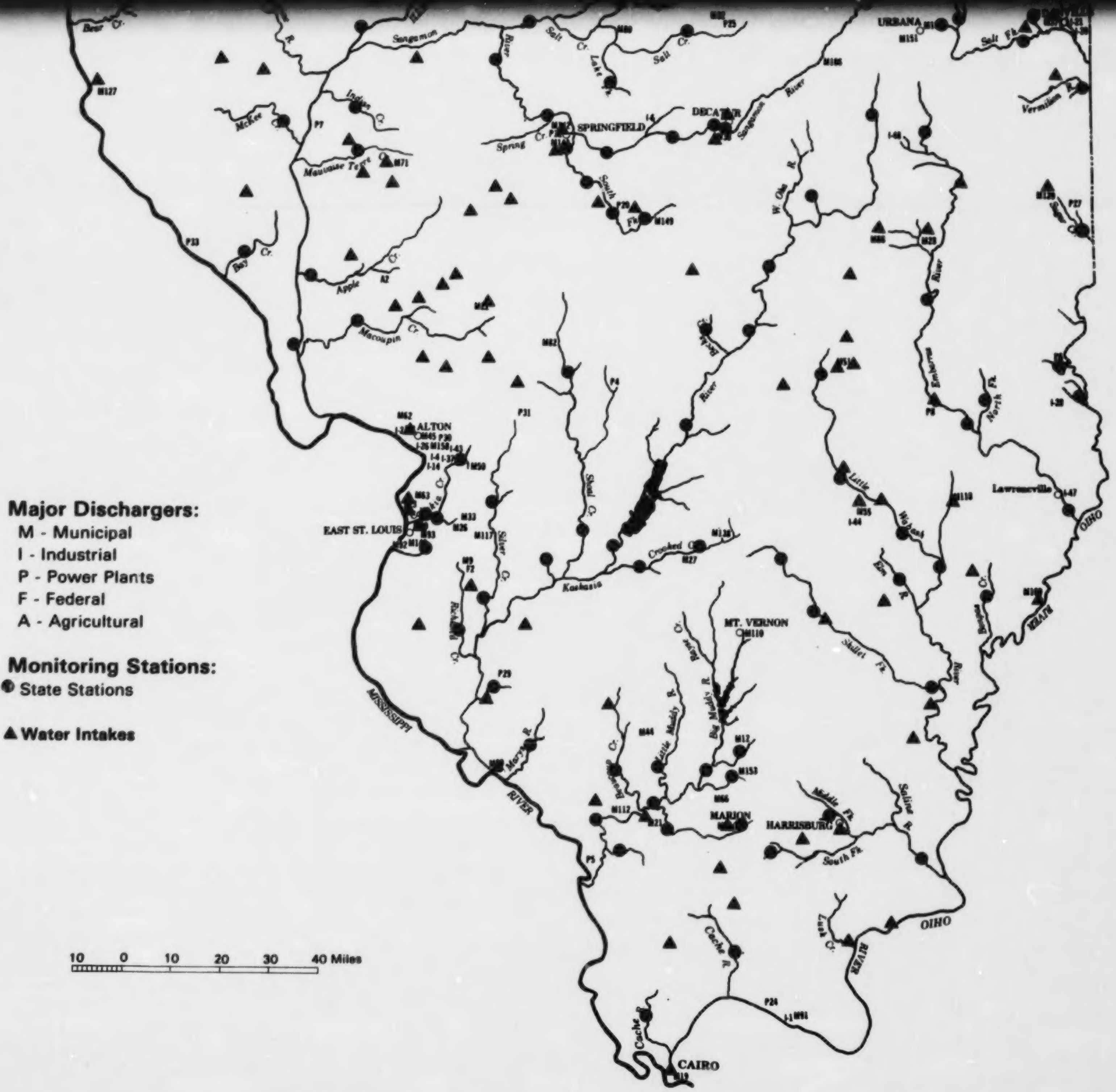
Plum R.
Richmond Cr.
Pecatonica R.
Kishwaukee R.
Coon Cr.
S. Branch
Killbuck Cr.
Kyte R.
Elkhorn
Rock R.
Green River
Blackberry Cr.
Somonauk Cr.
Fox River
Du Page R.
Des Plaines R.
Kankakee R.
Iroquois R.
Sugar Cr.
Mazon R.
Big Bureau Cr.
ILLINOIS RIVER
Vermilion R.
Edwards R.
N. Henderson Cr.
MISSISSIPPI RIVER
Spoon River
Big Cr.
Mackinaw R.
La Moine R.
Sangamon River
Salt Cr.
Kickapoo Cr.
Lake Fk.
Salt Fk.
Spring Cr.
South Fk.
Indian Cr.
McKee Cr.
Mauvaise Terre Cr.
Bear Cr.
W. Okaw R.
Vermilion R.


URBANA
DECATUR
SPRINGFIELD
ALTON
EAST ST. LOUIS
MT. VERNON
MARION
HARRISBURG
CAIRO
Lawrenceville
Sangamon
River
Salt Cr.
Lake Fk.
Spring Cr.
South Fk.
Indian Cr.
McKee Cr.
Mauvaise Terre Cr.
Bay Cr.
Apple Cr.
Macoupin Cr.
Shoal Cr.
Silver Cr.
Richland Cr.
Kaskaskia
Crooked Cr.
Big Muddy R.
Little Muddy R.
Beaucoup Cr.
Casey Cr.
Skillet Fk.
Little Wabash
Elm R.
Embarras River
North Fk.
Vermilion R.
Salt Fk.
Saline R.
Middle Fk.
South Fk.
Lusk Cr.
Cache R.
Mary's R.
MISSISSIPPI RIVER
OHIO RIVER
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
A - Agricultural
Monitoring Stations:
● State Stations
▲ Water Intakes
10 0 10 20 30 40 Miles

3

4

ILLINOIS

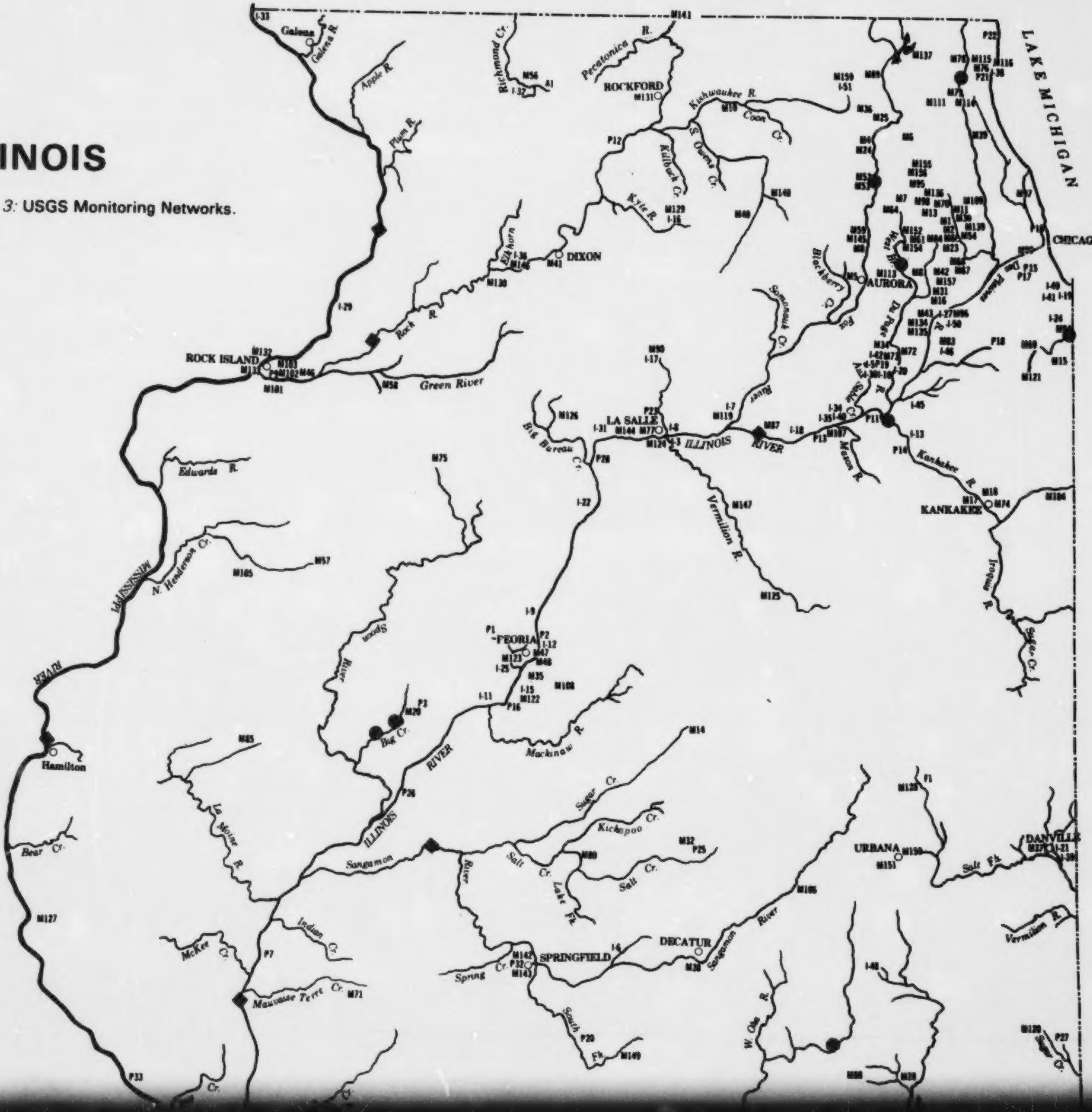
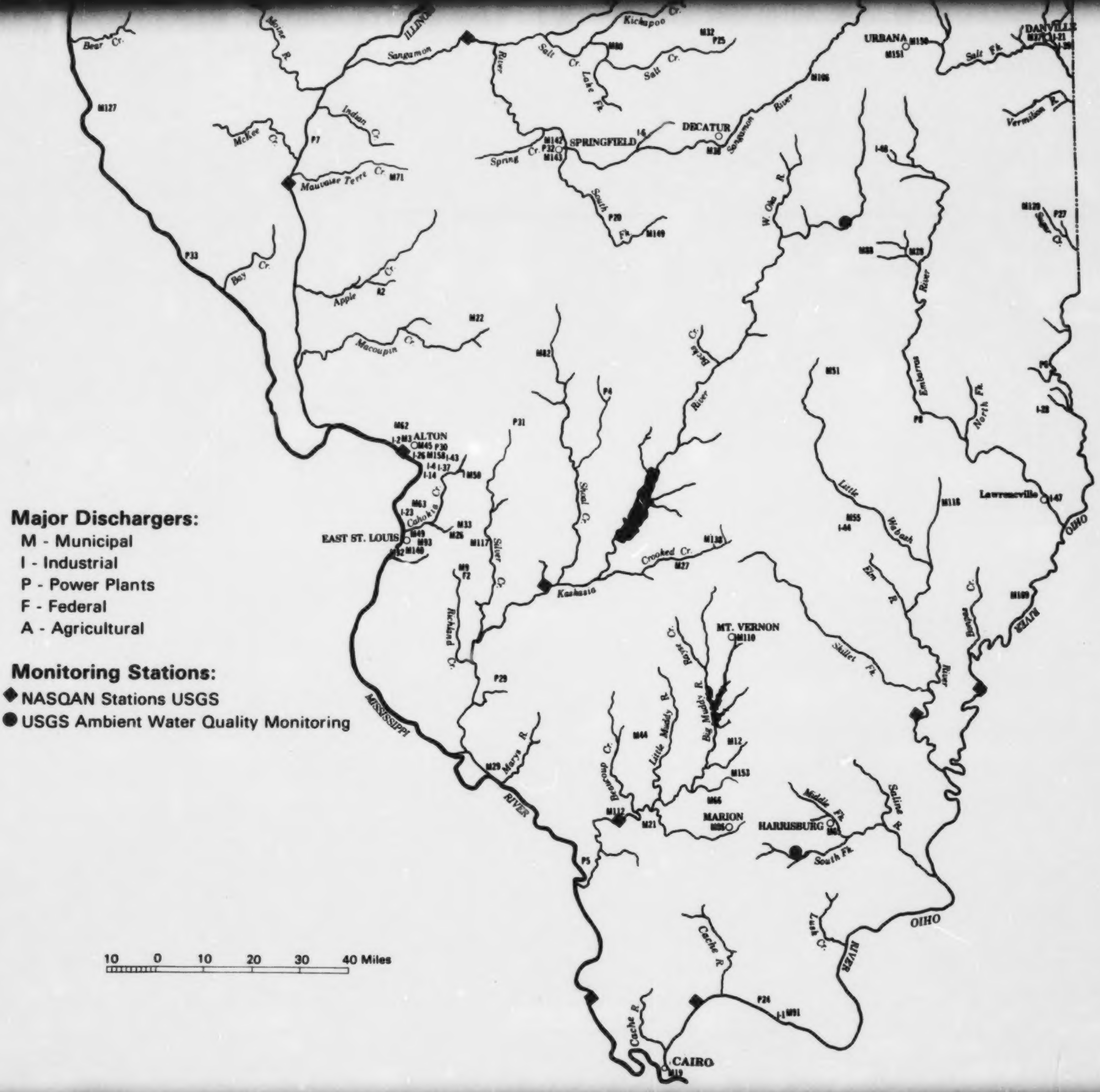

LAKE MICHIGAN
CHICAGO
Galena
Galena R.
Apple R.
Plum R.
Richmond Cr.
Pecatonica R.
ROCKFORD
Kishwaukee R.
Coon Cr.
S. Owens Cr.
Killbuck Cr.
Kyte R.
Elkhorn
DIXON
Rock R.
Green River
ROCK ISLAND
AURORA
West Br.
Du Page R.
Des Plaines R.
Blackberry Cr.
Fox River
Somonauk Cr.
Aux Sable Cr.
Mason R.
Kankakee R.
KANKAKEE
Iroquois R.
Sugar Cr.
LA SALLE
ILLINOIS RIVER
Big Bureau Cr.
Vermilion R.
Edwards R.
N. Henderson Cr.
MISSISSIPPI RIVER
Spoon River
PEORIA
Big Cr.
Mackinaw R.
Hamilton
La Moine R.
Bear Cr.
Sangamon River
Sugar Cr.
Kickapoo Cr.
Salt Cr.
Lake Fk.
Indian Cr.
McKee Cr.
Mauvaise Terre Cr.
Spring Cr.
SPRINGFIELD
South Fk.
DECATUR
W. Oka R.
URBANA
Salt Fk.
DANVILLE
Vermilion R.

Figure 3: USGS Monitoring Networks.

45e


Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
A - Agricultural
Monitoring Stations:
◆ NASQAN Stations USGS
● USGS Ambient Water Quality Monitoring
10 0 10 20 30 40 Miles
ILLINOIS
MISSISSIPPI RIVER
OIHO RIVER
OHIO RIVER
DANVILLE
URBANA
DECATUR
SPRINGFIELD
ALTON
EAST ST. LOUIS
MT. VERNON
MARION
HARRISBURG
CAIRO
Lawrenceville
Sangamon River
Salt Cr.
Lake Fk.
Kickapoo Cr.
Salt Fk.
Vermilion R.
Sugar Cr.
Spring Cr.
South Fk.
Indian Cr.
McKee Cr.
Mauvaise Terre Cr.
Moine R.
Bear Cr.
Bay Cr.
Apple Cr.
Macoupin Cr.
Cahokia Cr.
Silver Cr.
Richland Cr.
Shoal Cr.
Kaskaskia River
Beck's Cr.
W. Oka R.
Crooked Cr.
Embarras River
North Fk.
Little Wabash
Elm R.
Skillet Fk.
Wabash River
Bonpas Cr.
Big Muddy R.
Little Muddy R.
Beaucoup Cr.
Marys R.
Saline R.
Middle Fk.
South Fk.
Lusk Cr.
Cache R.
Cache R.
M127
P33
P7
M71
A2
M22
M62
M82
P4
P31
M150
M117
M33
M26
P29
M29
P5
M112
M21
M44
M12
M153
M66
M95
M110
M139
M27
M51
M55
I-44
M116
P8
M28
M88
I-48
M120
P27
P6
I-28
M109
P24
M91
M19
M106
M130
M151
M32
P25
M80
M142
P32
M143
I-6
M38
P20
M149
I-2 M3
M45 P30
I-26 M158 I-43
I-4 I-37
I-14
M50
M63
I-23
M49
M93
M52 M140
M9
F2
I-47
M37 I-21
I-39

(e) Special Monitoring Agreements

The State has formal and informal agreements with agencies to obtain water quality data within the state. In addition to the USGS, the state has a formal agreement with the City of Chicago for collection of data on Lake Michigan. Also, Metropolitan Sanitary District data for the Chicago area are used by the State, although they do not have a formal agreement with MSD.

(3) Major Dischargers - Fixed Station Monitoring

In spite of the indicated coverage of the various monitoring networks, a careful examination of Figures 1 thru 3, showing the locations of major dischargers together with the locations of the monitoring stations, reveals that 48 major dischargers are not being monitored by any network station within a distance of 15 miles. Although there are no criteria relating dischargers to downstream monitoring, the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed in Table 2 below. A complete listing of all major dischargers in the State of Illinois is presented in Attachment 2. Certain of the dischargers to the Ohio River may have ORSANCO stations within 15 miles.

TABLE 2
MAJOR DISCHARGERS NOT MONITORED - ILLINOIS

Discharger

1. Mt. Carmel WWTP
2. Marathon Oil Co., Robinson
3. Mattoon WWTP
4. Charleston WWTP
5. Central Illinois Public Service, Coffen
6. Central Illinois Public Service, Grand Tower
7. Chester WWTP
8. Sauget WWTP
9. Metro East San. Dist., Cahokia
10. East St. Louis WWTP
11. Granite City WWTP
12. Granite City Steel Co., Granite City
13. Clark Oil & Refinery Corp., Hartford
14. Shell Oil Co., Wood River
15. Illinois Power Co., Wood River
16. Wood River WWTP
17. Laclede Steel Co., Alton
18. Alton Box Board Co., Alton
19. Alton WWTP
20. American Oil Co., Wood River
21. East Alton WWTP

20. Olin Corp., East ALton

23. Metro East San. Dist., Lansdowne

24. Stepan Chemical Co., Elwood

25. Western Illinois Power Co-op, Pike

TABLE 2 (cont'd)
MAJOR DISCHARGERS NOT MONITORED - ILLINOIS

Discharger

26. Quincy WWTP
27. Illinois Power Co., Havana
28. Commonwealth Edison, Powerton
29. Caterpillar Tractor Co., Mapleton
30. Galesburg WWTP
31. Pontiac WWTP
32. Milan WWTP
33. Rock Island WWTP
34. Rock Island Southwest WWTP
35. Moline South WWTP
36. Moline North WWTP
37. East Moline WWTP
38. Commonwealth Edison, Quad Cities
39. Caterpillar Tractor Co., Joliet
40. GAF Corp., Joliet
41. Mobil Oil Corp., Joliet
42. SCM Corp. (Glidden Durkee Div.), Joliet
43. Commonwealth Edison, Joliet
44. Joliet East WWTP
45. Joliet West WWTP
46. Amoco Chemicals Corp., Joliet
47. N-Ren Corp., East Dubuque
48. Minnesota Mining & Mfg. Co., Cordova

(4) Quality Assurance Program

The State of Illinois has not collated a total quality assurance (QA) document with QA management responsibility identified for the total monitoring effort. Therefore, data quality cannot be verified, based on those QA principles required by the Agency in a centrally managed QA program, even though the state has very good analytical capability. The State is committed to finalizing a QA program that will meet Agency requirements. Considerable progress was made in FY '80. QA management responsibilities have been defined. QA Officers have been identified with QA responsibilities that impact data quality. The identified QA management is excellent and is in a position to mandate operation change where required. QA management documentation, laboratory methodology documentation, and field sampling documentation is approximately 80% complete and scheduled for completion by the end of the 2nd quarter of FY '81. Based on the Director of the State Agency's commitment to QA, the State's final program should prove to be acceptable in meeting the Agency's QA requirements.

(5) Intensive Survey Program

The State conducts an intensive survey program to supplement the baseline water quality data provided by the ambient network. The monitoring included water column, bottom sediment, diurnal assessments, macroinvertebrates, effluents and/or fish. During 1979, intensive surveys were conducted in lakes. Survey abstracts were submitted for the 15 surveys completed. The abstracts described the survey area and summarized the results. However, not all of the abstracts included a statement explaining the objectives of the survey. The abstracts did not include an assessment of the attainment status of the 1983 "fishable/swimmable" water quality goal.

A list of the 15 surveys completed during June- Sept. 1979 follows:

Cedar Lake in Lake County
Devils Kitchen Lake in Williamson County
Johnson Sauk Trail Lake in Stevenson Co.
Lake Egypt in Williamson/Johnson Co.
Lake Mattoon in Coles County
Lake Faykerville/Christenson CO.
Lincoln Trail Lake in Clark County
Long Lake in Lake County
Paradise Lake In Coles county
Pittsfield Lake in Pike county
Racoon Lake in Marion co.
Round Lake in Lake County
Shabbona Lake in Dekalb County
Stephen A. Forbes Lake in Marion Co.
Otter Laked in Macoupin Co.

(6) Effluent Monitoring Program

Illinois has 159 municipal, 2 agricultural, 2 federal and 84 non-municipal major dischargers. Inspections planned and completed during Fy 79 were as follows:

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	82	
Municipal	0	75
Non-Municipal		35
Federal	0	0
Compliance Evaluation Inspections (CEI)	190	
Municipal		76
Non-Municipal		53
Federal	0	0
Toxics	0	
Municipal		0
Non-Municipal		0

The State's compliance program is excellent. Commitments were made to complete a sampling (CSI) or evaluation (CEI) at all major dischargers during FY 79. The State exceeded their commitment for CSI surveys, completeing 108 out of 82 committed. However, the state did not meet their commitment for CEI surveys, completing only 129 against a commitment of 190.

It should be noted that the results of compliance monitoring for FY 1979 (State and Federal) reveals 55% of municipal and 51% of non-municipal major dischargers were in compliance with their permits.

Commitments were not made to complete any agricultural inspections, federal inspections or toxic inspections. However, 7 CEI agricultural surveys were conducted.

No commitments were made for CEIs or CSIs at any minor dischargers.

(7) Proposed Biological Monitoring Program

The proposed biological monitoring program, conducted as a part of the National Ambient Monitoring Program, can be summarized as follows for FY 1979:

Activity	Yes	No
Fish samples all stations	X	
Macroinvertebrates at all stations	X	
Periphyton at all stations		X
Plankton at all stations		X

The fish samples were collected by the Illinois State Conservation Department and analyzed by the State Department of Public Health with assistance from the Illinois Department of Agriculture. The macroinvertibrates were collected and analyzed by IEPA. Samples were collected from 38 of the 41 core stations. The biological work that was done was of acceptable quality.

(8) Data Interpretation and Reporting

Ambient Data

A STORET retrieval of 13 National Ambient Stations and 10 State ambient stations completed during Spring 1980 and later retrievals for the CY 1979 Environmental Profile clearly shows that the state is not storing data at all stations. That data stored does not meet the sampling frequency rate nor the parameter coverage of the Basic Water Monitoring Program.

Effluent Data

Upon completion of an inspection, the State submitted a report of each sampling and evaluation inspection of a major permittee to the Enforcement Division.

Intensive Survey Data

Abstracts were submitted for FY 79.

Section 305 (b) Report

Utilizing the section 305 (b) reporting process, the state prepares, and submits biennially, a report to the U.S. EPA describing the status of the waters of the State. The latest report submitted was for the years 1978 - 79.

Ambient Water Quality Monitoring Network

Water Column Parameters*

Universal Parameters: pH (00400), temperature (00011), electrical conductivity (00094), dissolved oxygen (00300), total suspended sediment (00530), total volatile suspended sediment (00505), total ammonia-nitrogen (00610), nitrite-nitrogen (00630), nitrate-nitrogen (00630), chemical oxygen demand (00335), fecal coliform (31616), and flow (00061).

Special Basin Parameters:

Big Muddy River Basin: Copper (01042) and boron (01022).

Des Plaines - Lake Michigan Basin (only in segments A-7, A-8, A-9, A-10, A-12, A-13, A-14, A-15, and A-16): Boron (01022, copper (01042), and cyanide (00720).

Fox River Basin: Total phosphorus (00665), dissolved phosphorus (00666) total kjeldahl nitrogen (00625), copper (01042), and lead (01051).

Illinois River Basin: Copper (01042), mercury (71900), lead (01051), and total iron (01045).

Kankakee River Basin: Copper (01042).

Kaskaskia River Basin: No special parameters.

Mississippi River Basin: Copper (01042), lead (01051), and mercury (71900).

Ohio River Basin: Cadmium (01027), chloride (00940), copper (01042), and cyanide (00720).

Sangamon River Basin: Copper (01042) and total iron (01045).

Wabash River Basin: Chloride (00940), copper ((01042), lead (01051), and mercury (71900).

Sub-Networks with appropriate Parameters;

A. Agricultural Areas: No special parameters.

B. Silvicultural areas: No special parameters.

C. Urban areas: Chlorides (00940), lead (01051), oil and grease (00552), and sulfate (00945).

D. Mining areas: Total acidity (00435), alkalinity (00410), total iron (01045), manganese (010055), zinc (01092), mercury (71900), sulfate (00945), and lead (01051).

E. Public Water Supply Sources: No special parameters.

F. Lake (or lake like) Watersheds: Total Phosphorus (00665), total kjeldahl nitrogen (00625), and dissolved phosphorus (00666).

G. Lake Michigan: Turbidity (00070), odor (00085), electrical conductivity (00094), chemical oxygen demand (00335), pH (00400), total nonfiltrable residue (00530), filtrable residue (00515), organic nitrogen (00605), ammonia nitrogen (00610), nitrite-nitrate nitrogen (00630), total phosphate (00650), dissolved phosphate (00653), sodium (00929), potassium (00937), chloride (00940), sulfate (00945), silica (00956), iron (01045), phenols (32730), asbestos (34225), plate count (31751), total coliform (31504), fecal coliform (31616), fecal strep (31679), fungi actinomycetes (80150), plankton (60050), and kjeldahl nitrogen (00625).

H. Special Morphologic Zone: No special parameters.

I. National Water Quality Monitoring Network (CORE)
Monthly: pH (00400), temperature (00011), electrical conductivity (00094), dissolved oxygen (00300), total suspended sediment (00530), nitrite-nitrate nitrogen (00630), total kjeldahl nitrogen (00625), chemical oxygen demand (00335), fecal coliform (31616), total phosphorus (00665), and flow (00061).
Annually: Arsenic (01002), cadmium (01027), chromium (01034), copper (01042), mercury (71900), lead (01051), PCB's (39516), aldrin (39330), dieldrin (39380), DDT (39370, 39327, 39320, 39315, 30310, 39305, 39300), chlordane (39350, 39065, 39068, 39071), endrin (39390), methoxychlor (39480), hexachlorocyclohexane (39334, 39810), hexachlorobenzene (39700), and pentachlorophend (39032).

J. Biological Monitoring (Annually)

K. Fish Flesh Monitoring (Annually)

Sampling Agencies

IEPA - Illinois Environmental Protection Agency
USGS - United States Geological Survey
USGS-ISWS - Illinois State Water Survey
USGS-IBPH - Indiana Board Public Health
SLCE - St. Louis District Corps of Engineers

09/24/79

Years of Record information obtained from the edited data included in the United States Geological Survey Publications:

Chemical Analyses of Surface Waters in Illinois, 1958-74, Vol. I, II, III.

Chemical Analyses of Surface Waters in Illinois, 1975-77, Vol. I, II, III.

Water Resources Data for Illinois, 1978, Vol. I, II.

ILLINOIS

FY 1979 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
1.	Addison North	Addison	IL 0033812	5/31/82
2.	Addison South	Addison	IL 0027367	6/30/79
3.	Alton	Alton	IL 0027464	2/28/81
4.	Algonquin	Algonquin	IL 0023329	4/30/84
5.	Aurora	Aurora	IL 0020818	6/30/81
6.	Barrington	Barrington	IL 0021598	11/30/81
7.	Bartlett	Bartlett	IL 0027618	6/01/79
8.	Batavia	Batavia	IL 0022543	8/31/83
9.	Belleville	Belleville	IL 0021873	5/01/83
10.	Belvidere	Belvidere	IL 0027685	9/30/82
11.	Bensenville Plant No. 1	Bensenville	IL 0021849	12/31/81
12.	Benton	Benton	IL 0022365	12/31/81
13.	Bloomingdale (South)	Bloomingdale	IL 0021130	12/06/78
14.	Bloomington-Normal S.D.	Bloomington	IL 0027731	7/01/82
15.	Bloom Township	Bloom Township	IL 0027723	7/31/82
16.	Bolingbrook	Bolingbrook	IL 0032689	7/31/79
17.	Bourbonnais	Bourbonnais	IL 0025275	12/31/83
18.	Bradley	Bradley	IL 1027766	5/31/82
19.	Cairo	Cairo	IL 0023825	7/31/81
20.	Canton (West)	Canton	IL 0027839	9/30/79
21.	Carbondale (S.E.)	Carbondale	IL 0027898	2/28/81
22.	Carlinville	Carlinville	IL 0022675	12/31/81
23.	Carol Stream	Carol Stream	IL 0026352	8/31/81
24.	Carpentersville	Carpentersville	IL 0027944	8/31/81
25.	Cary	Cary	IL 0020516	12/31/83
26.	Caseyville Township	Caseyville Twp.	IL 0021083	12/30/83
27.	Centralia	Centralia	IL 0027979	7/31/81
28.	Charleston	Charleston	IL 0021644	7/31/81
29.	Chester	Chester	IL 0028045	7/31/81
* 30.	Citizen Utility Co.-Plt. #1	Addison	IL 0032727	6/01/79
* 31.	Citizen Utility Co.-Plt. #2	Bolingbrook	IL 0032735	12/31/79
32.	Clinton S.D.	Clinton	IL 0023612	8/31/82
33.	Collinsville	Collinsville	IL 0028215	1/31/79
34.	Crest Hill	Crest Hill	IL 0021121	12/31/81
35.	Creve Coeur	Creve Coeur	IL 0021237	8/31/81
36.	Crystal Lake	Crystal Lake	IL 0028282	12/31/81
37.	Danville	Danville	IL 0020788	6/30/82
38.	Decatur	Decatur	IL 0028321	1/31/81
39.	Deerfield	Deerfield	IL 0028347	12/31/81
40.	DeKalb	DeKalb	IL 0023027	12/31/81
41.	Dixon	Dixon	IL 0026450	12/31/81
42.	Downers Grove	Downers Grove	IL 0028380	1/01/82
43.	DuPage Co. Dept. Public Works (Marion Brook)	Darien	IL 0028495	7/31/79
44.	DuQuoin	DuQuoin	IL 0028517	4/30/81
45.	East Alton	East Alton	IL 0023094	8/31/81

ILLINOIS

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
46.	East Moline	East Moline	IL 0028550	12/30/83
47.	East Peoria	East Peoria	IL 0028576	3/01/79
48.	East Peoria #3	East Peoria	IL 0046213	3/31/79
49.	East St. Louis	East St. Louis	IL 0033472	6/30/83
50.	Edwardsville	Edwardsville	IL 0026310	9/30/81
51.	Effingham	Effingham	IL 0028622	9/30/81
52.	Elgin - North	Elgin	IL 0028665	9/30/82
53.	Elgin - South	Elgin	IL 0028657	6/30/84
54.	Elmhurst	Elmhurst	IL 0028746	9/30/79
55.	Flora	Flora	IL 0020273	9/30/81
56.	Freeport	Freeport	IL 0023591	12/31/80
57.	Galesburg	Galesburg	IL 0023141	1/31/82
58.	Geneseo	Geneseo	IL 0021814	8/31/81
59.	Geneva	Geneva	IL 0020087	5/31/82
60.	Glendale Heights	Glendale Heights	IL 0028967	9/01/79
61.	Glen Ellyn	Glen Ellyn	IL 0021547	11/01/79
62.	Godfrey Township - Main STP	Godfrey Township	IL 0036421	9/01/80
63.	Granite City	Granite City	IL 0033481	9/30/83
64.	Hanover Park #1	Hanover Park	IL 0034479	5/31/84
65.	Harrisburg	Harrisburg	IL 0029149	3/31/82
66.	Herrin	Herrin	IL 0029165	10/31/81
67.	Hinsdale (Burr Ridge)	Burr Ridge	IL 0022586	4/30/84
68.	Hinsdale (Oak Brook)	Oak Brook	IL 0022594	6/01/79
69.	Homewood	Homewood	IL 0029211	1/31/82
70.	Itasca	Itasca	IL 0026280	6/30/79
71.	Jacksonville	Jacksonville	IL 0021661	11/30/81
72.	Joliet (East)	Joliet	IL 0022519	6/01/82
73.	Joliet (West)	Joliet	IL 0033553	7/31/82
74.	Kankakee	Kankakee	IL 0021784	10/01/79
75.	Kewanee	Kewanee	IL 0029343	11/30/81
76.	Lake Co. Dept. of Public Works	New Century Town	IL 0022071	6/01/79
77.	LaSalle	LaSalle	IL 0029424	12/31/79
78.	Lake County - Des Plaines River Plant	Lake County	IL 0022055	11/30/81
79.	Libertyville	Libertyville	IL 0029530	6/01/79
80.	Lincoln	Lincoln	IL 0029564	2/01/81
81.	Lisle	Lisle	IL 0028452	6/01/79
82.	Litchfield	Litchfield	IL 0020621	5/31/82
83.	Lockport	Lockport	IL 0029611	3/31/82
84.	Lombard	Lombard	IL 0022471	2/28/82
85.	Macomb	Macomb	IL 0029688	11/30/82
86.	Marion	Marion	IL 0029734	4/30/82
87.	Marseilles	Marseilles	IL 0021059	5/31/82
88.	Mattoon	Mattoon	IL 0029831	11/30/82
89.	McHenry	McHenry	IL 0021067	12/31/83

ILLINOIS

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
90.	Mendota	Mendota	IL 0023221	1/31/81
91.	Metropolis	Metropolis	IL 0029874	3/31/82
92.	Metro East S.D. (Cahokia)	Cahokia	IL 0028606	6/30/83
93.	Metro East S.D. (Landsdowne)	Landsdowne	IL 0028592	6/30/83
94.	MSDGC - Calumet	Calumet	IL 0028061	6/30/82
95.	MSDGC - John E. Egan	Schaumburg Twp.	IL 0036340	9/30/79
96.	MSDGC - Lemont	Lemont	IL 0028070	2/28/82
97.	MSDGC - North Side	North Side	IL 0028088	2/28/82
98.	MSDGC - Hanover Park	Hanover Park	IL 0036137	2/28/82
99.	MSDGC - West Southwest	West Southwest	IL 0028053	2/28/82
100.	MSDGC - O'Hare	Des Plaines	IL 0047741	6/30/79
101.	Milan	Milan	IL 0020214	3/31/81
102.	Moline (South)	Moline (South)	IL 0029939	11/30/82
103.	Moline (North)	Moline	IL 0029947	11/30/81
104.	Momence	Momence	IL 0022179	12/31/79
105.	Monmouth	Monmouth	IL 0021253	6/30/82
106.	Monticello	Monticello	IL 0029980	3/31/82
107.	Morris	Morris	IL 0021113	11/30/81
108.	Morton	Morton	IL 0030015	3/31/82
109.	Mount Carmel	Mount Carmel	IL 0030023	3/31/82
110.	Mount Vernon	Mount Vernon	IL 0027341	5/31/82
111.	Mundelein	Mundelein	IL 0022501	7/01/79
112.	Murphysboro	Murphysboro	IL 0023248	5/06/81
113.	Naperville (Springbrook)	Naperville	IL 0034061	10/31/83
114.	North Shore Sanitary Dist. (Clavey Road)	Clavey Road	IL 0030171	12/01/81
115.	North Shore Sanitary Dist. (Gurnee)	Gurnee	IL 0035092	10/01/79
116.	North Shore Sanitary Dist (Waukegan)	Waukegan	IL 0030244	12/01/81
117.	O'Fallon	O'Fallon	IL 0021636	3/31/81
118.	Olney	Olney	IL 0048755	5/31/82
119.	Ottawa	Ottawa	IL 0030384	5/31/82
120.	Paris (South)	Paris	IL 0021377	3/31/82
* 121.	Park Forest South Utilities Co.	Park Forest South	IL 0024473	12/31/79
122.	Pekin	Pekin	IL 0034495	11/30/62
123.	Peoria - Greater Peoria S.D.	Peoria	IL 0021288	5/31/82
124.	Peru	Peru	IL 0030660	11/30/82
125.	Pontiac	Pontiac	IL 0030457	8/31/78
126.	Princeton	Princeton	IL 0020575	4/30/82
127.	Quincy	Quincy	IL 0030503	3/31/81
128.	Rantoul	Rantoul	IL 0022128	6/01/82
129.	Rochelle	Rochelle	IL 0030741	1/15/83

ILLINOIS

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
130.	Rock Falls	Rock Falls	IL 0026514	6/30/79
131.	Rockford	Rockford	IL 0027201	6/30/82
132.	Rock Island	Rock Island	IL 0030783	12/31/82
133.	Rock Island (Southwest)	Rock Island	IL 0036382	7/31/79
134.	Romeoville	Romeoville	IL 0030805	9/30/79
135.	Romeoville #2	Romeoville	IL 0048526	4/30/82
136.	Roselle	Roselle	IL 0030813	12/31/81
137.	Round Lake Sanitary Dist.	Round Lake	IL 0030830	4/30/82
138.	Salem	Salem	IL 0023264	7/24/79
139.	Salt Creek Drainage Basin	Salt Creek	IL 0030953	2/29/84
140	Sauget	Sauget	IL 0021407	6/30/83
141.	South Beloit	South Beloit	IL 0021156	1/31/83
142.	Springfield (Spring Creek)	Springfield	IL 0021989	8/31/81
143.	Springfield (Sugar Creek)	Springfield	IL 0021971	5/31/81
144.	Spring Valley	Spring Valley	IL 0031216	1/31/84
145.	St. Charles	St. Charles	IL 0022705	8/31/81
146.	Sterling	Sterling	IL 0031259	6/30/83
147.	Streator	Streator	IL 0022004	11/30/83
148.	Sycamore (North)	Sycamore	IL 0031291	10/31/81
149.	Taylorville	Taylorville	IL 0031356	2/28/83
150.	Urbana-Champaign (N.E.)	Champaign	IL 0031500	4/01/82
151.	Urbana-Champaign (S.W.)	Champaign	IL 0031526	4/01/82
152.	West Chicago	West Chicago	IL 0023469	4/30/82
153.	West Frankfort	West Frankfort	IL 0031704	12/31/78
154.	Wheaton	Wheaton	IL 0031739	5/01/82
155.	Wood Dale (North)	Wood Dale	IL 0020061	8/01/79
156.	Wood Dale (South)	Wood Dale	IL 0034274	12/31/79
157.	Woodridge	Woodridge	IL 0031844	7/31/82
158.	Wood River	Wood River	IL 0031852	5/01/81
159.	Woodstock	Woodstock	IL 0031861	6/01/82

*Semi-Public Permits

ILLINOIS

FY 1979 LIST OF MAJOR DISCHARGERS

AGRICULTURAL

	Name	Location	Permit No.	Expiration Date
1.	Gilt Edge Farms, Inc.	Freeport County	IL 0048909	12/31/80
2.	Longmeyer Feedlot	Greene County	IL 0034371	7/01/80

FEDERAL

1.	Chanute Air Force Base	Champaign Co.	IL 0027073	9/21/79
2.	Scott Air Force Base	St. Clair Co.	IL 0026859	6/30/83

ILLINOIS

POWER PLANTS

	Name	Location	Permit No.	Expiration Date
1.	Central Illinois Light	Edwards	IL 0001970	8/31/80
2.	Central Illinois Light	Wallace	IL 0001988	8/31/80
3.	Central Illinois Light	Duck Creek	IL 0055620	Never Issued
4.	Central Illinois Pub. Serv.	Coffeen	IL 0000108	9/30/80
5.	Central Illinois Pub. Serv.	Grand Tower	IL 0000124	9/30/80
6.	Central Illinois Pub. Serv.	Hutsonville	IL 0004120	9/30/80
7.	Central Illinois Pub. Serv.	Meredosia	IL 0000116	9/30/80
8.	Central Illinois Pub. Serv.	Newton	IL 0049191	8/31/80
9.	Commonwealth Edison	Quad Cities	IL 0005037	9/30/80
10.	Commonwealth Edison	Fisk	IL 0002178	9/30/80
11.	Commonwealth Edison	Dresden	IL 0002224	8/31/80
12.	Commonwealth Edison	Byron	IL 0048313	4/01/81
13.	Commonwealth Edison	Collins	IL 0048143	4/01/81
14.	Commonwealth Edison	Braidwood	IL 0048321	4/01/81
15.	Commonwealth Edison	Crawford	IL 0002186	9/30/80
16.	Commonwealth Edison	Powerton	IL 0002232	8/31/80
17.	Commonwealth Edison	Ridgeland	IL 0002194	7/31/80
18.	Commonwealth Edison	Will County	IL 0002208	8/31/80
19.	Commonwealth Edison	Joliet	IL 0002216	7/31/80
20.	Commonwealth Edison	Kincaid	IL 0002241	7/31/80
21.	Commonwealth Edison	Waukegan	IL 0002259	9/30/80
22.	Commonwealth Edison	Zion	IL 0002763	8/31/80
23.	Commonwealth Edison	La Salle	IL 0048151	5/31/81
24.	Electric Energy	Joppa	IL 0004171	9/30/80
25.	Illinois Power	Clinton	IL 0036919	7/31/80
26.	Illinois Power	Havana	IL 0001571	3/31/81
27.	Illinois Power	Vermilion	IL 0004057	8/31/80
28.	Illinois Power	Hennepin	IL 0001554	9/30/80
29.	Illinois Power	Baldwin	IL 0000043	*
30.	Illinois Power	Wood River	IL 0000701	9/30/80
31.	R.E.A. - So. Ill. Power Co-op	Williamson	IL 0004316	6/25/80
32.	Springfield, City of Water, Light & Power	Springfield	IL 0024767	6/25/80
33.	Western Illinois Power Co-op	Pike	IL 0036765	6/25/80

* Expired

ATTACHMENT 2-6

Revised March 1980

ILLINOIS

FY 1980 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

	Name	Location	Permit No.	Expiration Date
1.	Allied Chemical Corp.	Metropolis	IL 0004421	5/31/80
2.	Alton Box Board Co.	Alton	IL 0000213	3/31/81
3.	American Nickeloid Co.	Peru	IL 0001724	2/28/81
4.	American Oil Co.	Wood River	IL 0000035	9/30/80
5.	Amoco Chemicals Corp.	Joliet	IL 0001643	3/31/81
6.	Borden Chemical	Illiopolis	IL 0001350	8/31/81
7.	Borg-Warner Corp.	Ottawa	IL 0001929	*
8.	Carus Chemical Co.	La Salle	IL 0002623	3/31/81
9.	Caterpillar Tractor Co.	Mossville	IL 0001414	10/01/80
10.	Caterpillar Tractor Co.	Joliet	IL 0001732	6/30/81
11.	Caterpillar Tractor Co.	Mapleton	IL 0001830	6/30/81
12.	Caterpillar Tractor Co.	East Peoria	IL 0002291	*
13.	Celotex Corp.	Wilmington	IL 0003247	3/31/81
14.	Clark Oil & Refinery Corp.	Hartford	IL 0001244	9/30/80
15.	CPC International, Inc.	Pekin	IL 0001953	*
16.	Del Monte	Rochelle	IL 0003417	5/31/84
17.	Del Monte	Mendota	IL 0003115	8/31/82
18.	Du Pont, E. I. & Co.	Seneca	IL 0001767	*
19.	Envirodyne (Wisc. Steel Div.)	Chicago	IL 0001660	*
20.	GAF Corp.	Joliet	IL 0002933	7/31/82
21.	GMC Foundry	Danville	IL 0004138	9/30/80
22.	Goodrich, B. F. Corp.	Henry	IL 0001392	6/30/82
23.	Granite City Steel Co.	Granite City	IL 0000329	6/30/80
24.	Interlake, Inc.	Chicago	IL 0002101	*
25.	Keystone Consolidated Ind.	Bartonville	IL 0002526	9/30/80
26.	Laclede Steel Co.	Alton	IL 0000612	9/30/80
27.	Lemont Mfg.	Lemont	IL 0001309	9/30/80
28.	Marathon Oil	Robinson	IL 0004073	9/30/80
29.	Minnesota Mining & Mfg. Co.	Cordova	IL 0003140	3/31/81
30.	Mobil Oil Corp.	Joliet	IL 0002861	9/30/80
31.	Mobil Chemical Co.	De Pue	IL 0032182	3/31/81
32.	Modern Plating Corp.	Freeport	IL 0003298	7/31/82
33.	N-Ren Corporation	E. Dubuque	IL 0003930	6/30/80
34.	Northern Illinois Gas. Co.	Morris	IL 0026662	9/30/82
35.	Northern Petrochemical Co.	Morris	IL 0002917	5/31/80
36.	Northwestern Steel & Wire Co.	Sterling	IL 0003794	9/30/80

* Expired

ILLINOIS

INDUSTRIAL (Cont.)

	Name	Location	Permit No.	Expiration Date
37.	Olin Corp.	East Alton	IL 0000230	*
38.	Outboard Marine Corp.	Waukegan	IL 0002267	3/31/80
39.	Peterson/Puritan	Danville	IL 0004162	*
40.	Reichold Chemical	Morris	IL 0034622	3/31/81
41.	Republic Steel Corp.	Chicago	IL 0002593	9/30/80
42.	SCM Corp. (Glidden Durkee Div.)	Joliet	IL 0002038	*
43.	Shell Oil Co.	Wood River	IL 0000205	9/30/80
44.	Sparton Manufacturing Co.	Flora	IL 0004588	6/30/81
45.	Stepan Chemical Co.	Elwood	IL 0002453	3/31/81
46.	Texaco, Inc.	Lockport	IL 0002305	9/30/80
47.	Texaco, Inc.	Lawrenceville	IL 0004219	9/30/80
48.	U.S. Industrial Chemical Co.	Tuscola	IL 0000141	3/31/81
49.	U.S. Steel Corp.	Chicago	IL 0002691	9/30/80
50.	Union Oil Co.	Lemont	IL 0001589	9/30/80
51.	Woodstock Die Casting Corp.	Woodstock	IL 0033863	6/30/81

* Expired

b. INDIANA

(1) Overview

Two agencies in Indiana are involved in ambient monitoring: the Indiana State Board of Health and the U.S. Geological Survey. The coverage provided by these networks meets the explicit intent of the Basic Monitoring Program. The program is intended to provide a data base which is representative of national water quality and trends. Within the coverage provided by these networks, there is no duplication considering sampling parameters and frequency. Indiana's Basic Monitoring Program has minor deficiencies in the areas of quality assurance, effluent monitoring program and data interpretation and reporting. These deficiencies are discussed in greater detail below.

(2) Assessement of the State Monitoring Program

The Indiana State Board of Health operates two fixed station networks in the State of Indiana, the National Ambient Network consisting of 21 stations and a State monitoring network consisting of 76 stations. Additionally, the USGS operates five networks of stations. An evaluation of each of these networks is presented below. ORSANCO monitoring stations along the Ohio River are supported in part by the State. An evaluation of this effort is not included in this report.

In addition to the monitoring networks, the following programs are also evaluated: quality assurance, intensive surveys, effluent monitoring, proposed biological monitoring and data interpretation and reporting.

(a) National Ambient Monitoring Network

As displayed in Figure 4, the Indiana State Board of Health operates a network of 21 National Ambient Water Quality Monitoring Stations. These stations, listed below in Table 3, are evenly divided between the land use classification of agricultural/rural and municipal/industrial.

TABLE 3
NATIONAL AMBIENT MONITORING STATION - INDIANA

Location	Station No.
Burns Ditch-Midwest Steel Catwalk at Mouth	BD-O
Indiana Harbor Canal-Youngstown Steel at Mouth	IHC-O
Indianapolis Water Canal-Headwaters at Broad Ripple	IWC-66
East Fork White River-Williams Bridge Below Bedford	EW-77
Kankakee River-Shelby-S.R. 55 Bridge	KR-65
Kankakee River-Kingbury Area-S.R.-105 Bridge	KR-125
Lake Michigan-Michigan City Waterworks Intake	LM-M
Lake Michigan-Whiting-Waterworks Intake	LM-M

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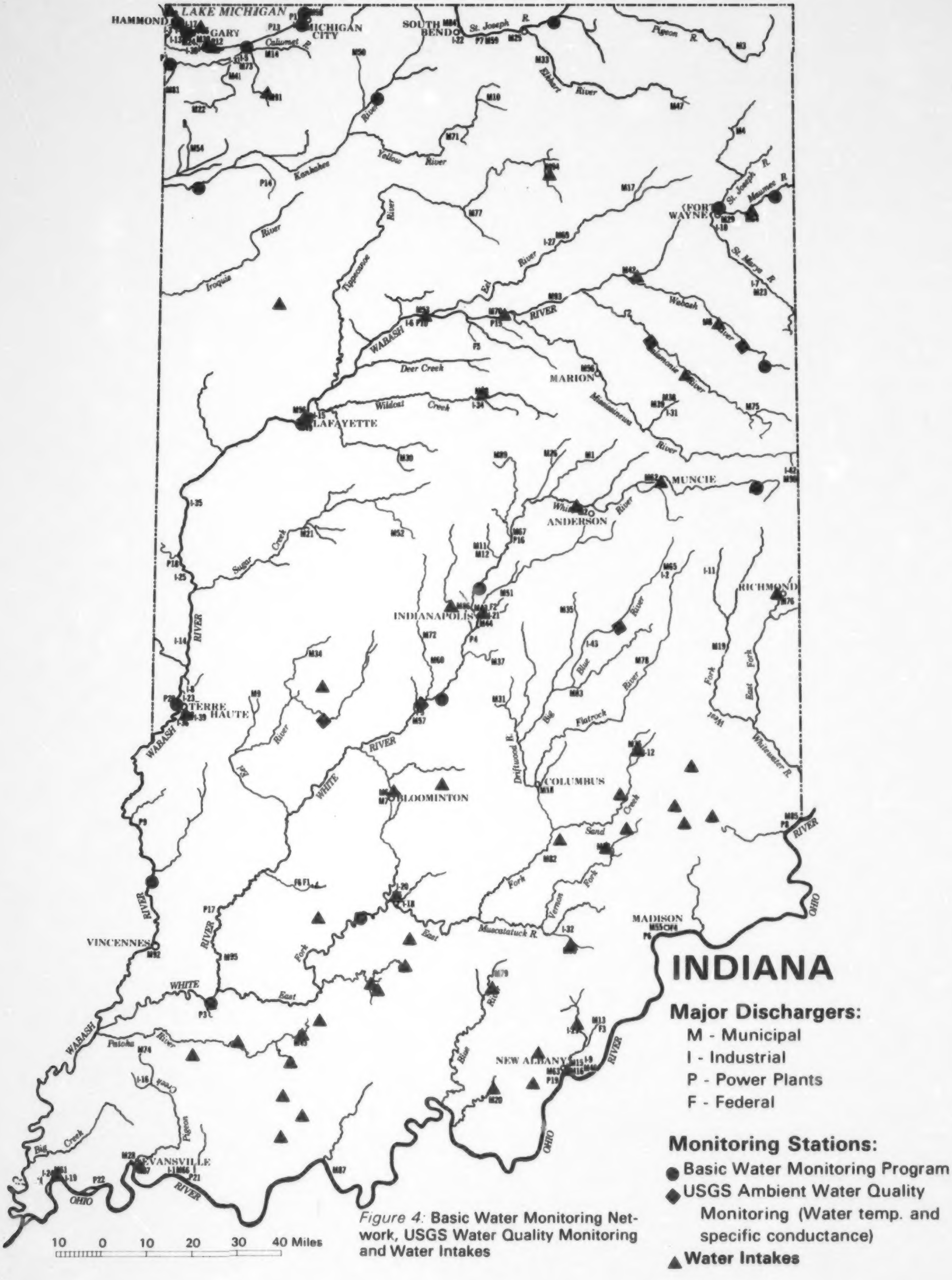
INDIANA
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● Basic Water Monitoring Program
◆ USGS Ambient Water Quality Monitoring (Water temp. and specific conductance)
▲ Water Intakes
LAKE MICHIGAN
HAMMOND
GARY
MICHIGAN CITY
SOUTH BEND
St. Joseph R.
Pigeon R.
Elkhart River
Calumet R.
Kankakee River
Yellow River
Iroquois River
Tippecanoe River
Eel River
FORT WAYNE
St. Joseph R.
Maumee R.
St. Marys R.
Wabash River
Salamonie River
Mississinewa River
WABASH RIVER
Deer Creek
Wildcat Creek
MARION
LAFAYETTE
MUNCIE
ANDERSON
White River
Sugar Creek
INDIANAPOLIS
RICHMOND
Blue River
Big Blue River
Flatrock River
Driftwood R.
East Fork
West Fork
Whitewater River
TERRE HAUTE
Eel River
WHITE RIVER
BLOOMINTON
COLUMBUS
Sand Creek
Vernon Fork
Muscatatuck R.
MADISON
OHIO RIVER
VINCENNES
East Fork
WHITE
Patoka River
Pigeon Creek
Big Creek
Blue River
NEW ALBANY
EVANSVILLE
OHIO
RIVER
10 0 10 20 30 40 Miles

Figure 4: Basic Water Monitoring Network, USGS Water Quality Monitoring and Water Intakes

TABLE 3 (Cont'd)
NATIONAL AMBIENT MONITORING STATIONS - INDIANA

Location	Station No.
Maumee River-Woodburn-S.R. 101 Bridge	M-95
St. Joseph River-South Bend-Auten Road Bridge	SJR-46
St. Joseph River-Bristol- County Road Bridge	SJR-78
Trail Creek-Michigan City-Franklin Street Bridge	TC-3
Wabash River-Breed Power Plant Below Terre Haute	WB-175
Wabash River-Ft. Wayne Waterworks Intake	WB-207
Wabash River-Cranville Bridge Below Lafayette	WB-292
Wabash River-Lafayette-S.R. 26 Bridege	WB-301
Wabash River-Geneva	WB-452
White River-Petersburg-S.R. 61 Bridge	WB-48
White River-Henderson Ford Bridge Below Indianapolis	WR-205
White River-Winchester-U.S. 27 Bridge	WR-250

The required frequency of sampling for the minimum parameter list is being met. In addition to the minimum parameter list, the State also analyzes many general chemistry and heavy metal parameters.

Description forms have been submitted for each designated station.

(b) State Monitoring Network

In addition to the basic network, the State of Indiana operates a larger network of ambient or fixed stations within the state. During FY 1979, a total of 76 stations were sampled for all or part of the year. This number include the State network and National Water Quality Surveillance System (NWQSS). Although the NWQSS program has been discontinued for FY 1980, the two station pairs on Wildcat and Mill Creeks have been incorporated into the basic network. These stations are shown in Figure 5.

The following tests are done at these stations: alkalinity, ammonia, BOD, COD, chloride, cyanide, fluoride, hardness, iron, lead, manganese, mercury, nitrate + nitrite - N, TKN, oil & grease, pH, phenol, total phosphorus, potassium, sodium, suspended solids, total solids, specific conductance, sulfate, TOC, calcium, magnesium, coliform-total and coliform-fecal. USGS flow data are used for this program.

These Analyses are in accordance with the minimum parameter list for the Basic Monitoring Program. In addition to the minimum parameter list, the following toxic pollutants are also analyzed: arsenic, cadmium, chromium, copper, nickel, and zinc. The State may, for selected stream segments, monitor for other toxic substances believed to be present. PCB monitoring is done on a special project basis aimed at areas and materials (water, sediments, sludge, fish, etc) known or suspected to contain PCBs.

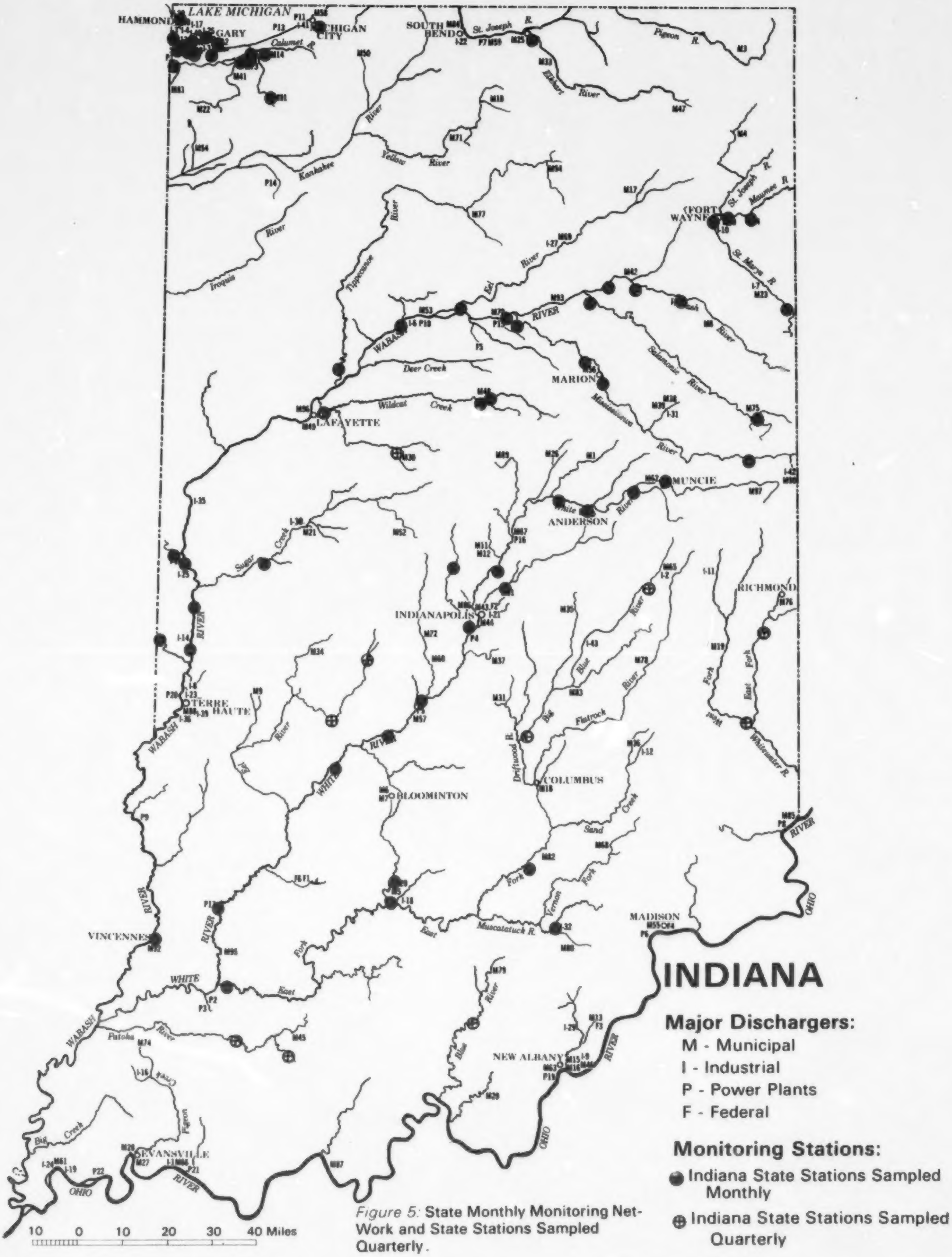
LAKE MICHIGAN
HAMMOND
GARY
MICHIGAN CITY
SOUTH BEND
St. Joseph R.
Pigeon R.
Elkhart River
Calumet R.
Kankakee River
Yellow River
Iroquois River
Tippecanoe River
Eel River
FORT WAYNE
St. Joseph R.
Maumee R.
St. Marys R.
WABASH RIVER
Deer Creek
Wildcat Creek
LAFAYETTE
MARION
Mississinewa River
Salamonie River
MUNCIE
ANDERSON
White River
Sugar Creek
INDIANAPOLIS
RICHMOND
TERRE HAUTE
Eel River
WHITE RIVER
BLOOMINTON
Big Blue River
Flatrock River
Driftwood R.
COLUMBUS
West Fork
East Fork
Whitewater R.
Sand Creek
Vernon Fork
Muscatatuck R.
East Fork
MADISON
VINCENNES
WHITE RIVER
Patoka River
Blue River
NEW ALBANY
OHIO RIVER
Pigeon Creek
Big Creek
EVANSVILLE
WABASH RIVER
10 0 10 20 30 40 Miles
INDIANA
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● Indiana State Stations Sampled Monthly
⊕ Indiana State Stations Sampled Quarterly

Figure 5: State Monthly Monitoring Net-Work and State Stations Sampled Quarterly.

As part of the State Ambient Monitoring Program, Lake Michigan public water supply intakes have been sampled since 1957. In addition, the Indiana Fish Sampling Program (carried out since 1971) supports lake pollution control efforts. This has included PCB evaluations.

(c) U.S. Geological Survey

Activities of an on-going monitoring nature operated by USGS in the State of Indiana are as follows: (1) National Stream Quality Accounting Network (NASQAN) (2) Hydrologic Benchmark program (3) temperature and specific conductance stations and (4) sediment stations. These networks are shown in Figures 4 and 6.

1. NASQAN Program

The USGS operates four stations in the NASQAN network in the State of Indiana At these stations, the following tests are done 12 times per year: water temperature, specific conductance, instantaneous discharge, pH, dissolved oxygen, fecal coliform, fecal streptococci, suspended sediment and other common constituents including major nutrients. Also at these stations, total organic carbon is run 8 times per year; phytoplankton is run 7 times per year and trace elements, total recoverable silver and periphyton are run 4 times per year. These analyses meet the requirements of the minimum parameter list for the Basic Water Monitoring Program.

2. NASQAN Pesticides Subnetwork

In the NASQAN network, one station also serves as a NASQAN Pesticides Subnetwork. Water samples are collected 4 times per year in November, February, May and August. Bottom material samples are collected in November and May. Sample containers and sample analyses are provided by the EPA laboratory, NSTL Station, Mississippi.

3. Hydrologic Benchmark Water-Quality Program

There is one Hydrologic Benchmark station in Indiana. At this station, the following tests are done monthly: instantaneous discharge, specific conductance, water temperature, pH, dissolved oxygen, total coliform bacteria, fecal coliform bacteria, fecal streptococci bacteria, suspended sediment, and other common constituents. These analyses meet the requirements of the Basic Water Monitoring Program.

4. Temperature and Specific Conductance Stations

The USGS operates 5 temperature and specific conductance stations in the State of Indidana.

5. Sediment Stations

The USGS operates a network of 51 sediment stations. The breakdown is as follows: Daily samples-7 stations; weekly samples-12 stations; monthly samples-20 stations; during high flow periods-12 stations. The only analysis performed at these stations is sediment concentration.

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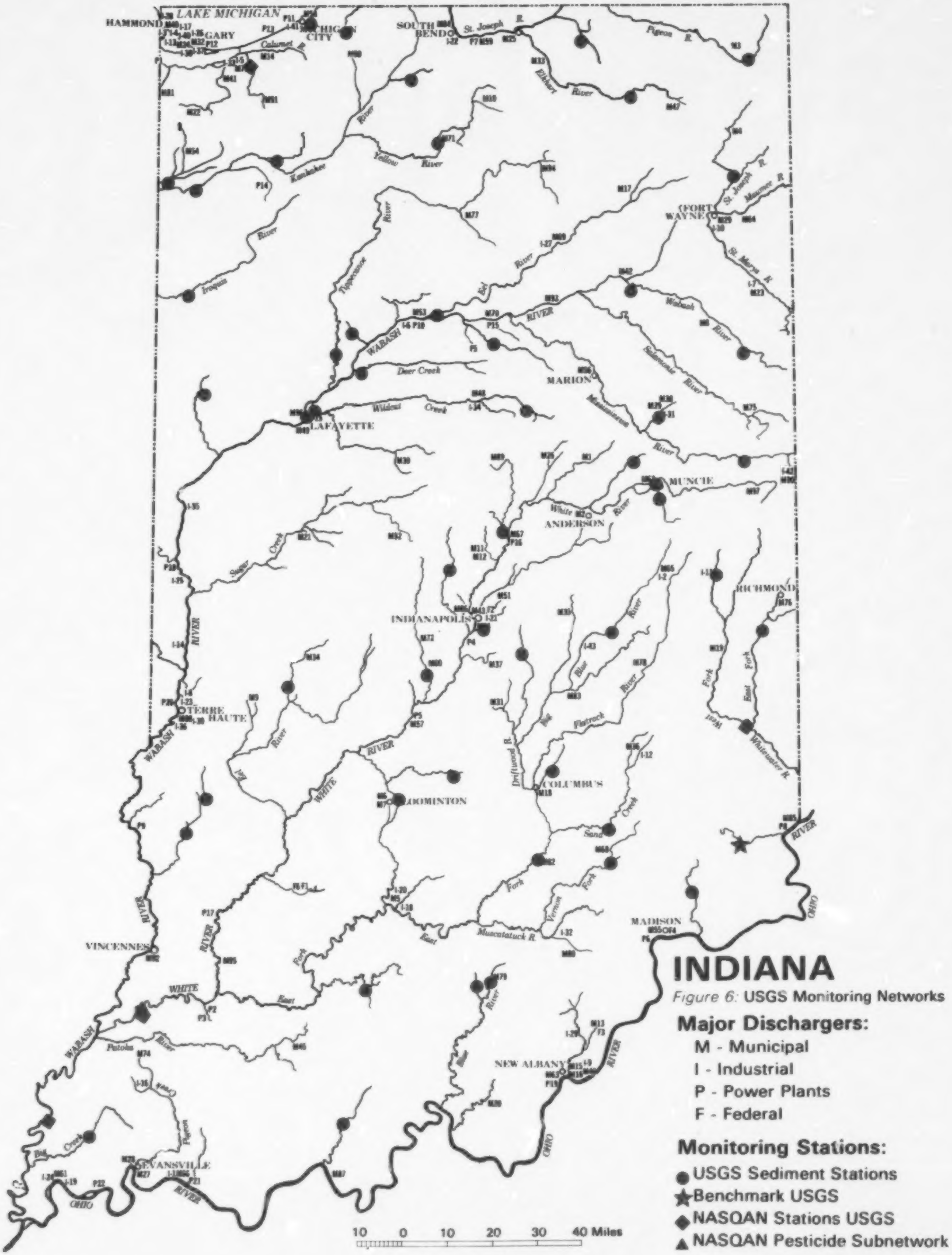

LAKE MICHIGAN
HAMMOND
GARY
MICHIGAN CITY
SOUTH BEND
St. Joseph R.
Pigeon R.
Elkhart River
Calumet R.
Kankakee River
Yellow River
Iroquois River
Tippecanoe River
Eel River
FORT WAYNE
St. Joseph R.
Maumee R.
St. Marys R.
WABASH RIVER
Wabash River
Salamonie River
Mississinewa River
MARION
Deer Creek
Wildcat Creek
LAFAYETTE
MUNCIE
White River
ANDERSON
Sugar Creek
INDIANAPOLIS
RICHMOND
Blue River
Big Blue River
Flatrock River
Driftwood R.
COLUMBUS
West Fork
East Fork
Whitewater R.
TERRE HAUTE
WABASH RIVER
Eel River
WHITE RIVER
BLOOMINTON
Sand Creek
Vernon Fork
Muscatatuck R.
East Fork
MADISON
OHIO RIVER
VINCENNES
WHITE RIVER
Patoka River
Blue River
NEW ALBANY
Pigeon Creek
Big Creek
EVANSVILLE
OHIO RIVER
INDIANA
10 0 10 20 30 40 Miles
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● USGS Sediment Stations
★ Benchmark USGS
◆ NASQAN Stations USGS
▲ NASQAN Pesticide Subnetwork

Figure 6: USGS Monitoring Networks

(3) Major Dischargers - Fixed Station Monitoring

A review of Figures 4-6, showing the locations of major dischargers together with the location of the monitoring stations, indicates that 38 major dischargers are not being monitored by any network station within a distance of 15 miles. Although there are no criteria relating dischargers to downstream monitoring, the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed in Table 4 below. A complete listing of all major dischargers in the State of Indiana is presented in the Attachment. Certain of the dischargers to the Ohio river may have ORSANCO stations within 15 miles.

TABLE 4
MAJOR DISCHARGERS NOT MONITORED - INDIANA

Discharger

1. Indiana Farm Bureau Coop., Mt./ Vernon
2. Corydon WWTP
3. Clarksville North WWTP
4. Clarksville South WWTP
5. Jeffersonville WWTP
6. U.S. Army Ammunition Plant, Charlestown
7. Charlestown WWTP
8. Louisville Cement, Speed
9. Emge Packing Co, FT. Branch
10. Princeton WWTP
11. U.S. Naval Ammunition Depot, Crane
12. U.S. Naval Ammunition Depot, Crane WWTP
13. Scottsburg WWTP
14. U.S. Army, Jefferson Proving Grounds, Madison
15. North Vernon WWTP
16. Greensburg WWTP
17. Delta Faucet Co., Greensburg
18. Rushville WWTP
19. Duwell Metal Products, Inc., Morristown
20. Franklin WWTP
21. Greencastle WWTP
22. Greenfield WWTP
23. Dana Corp., Hagerstown
24. Lebanon WWTP
25. Tipton WWTP
26. Elwood WWTP
27. Alexandria WWTP
28. North Manchester WWTP
29. Laketon Asphalt Co., Laketon
30. Rochester WWTP
31. Loweel WWTPO
32. Plymouth WWTP
33. Bremen WWTP
34. Kendallville WWTP
35. Angola WWTP
36. South Bend WWTP
37. La Porte WWTP
38. Crown Point WWTP

(4) Quality Assurance Program

The State of Indiana has not collated a total quality assurance (QA) document with QA management responsibility identified for the total monitoring effort. Management has not identified a QA element or total 106 monitoring activity. The present limited structure is too diffuse and ill defined for an effective QA program. No QA function or line of authority has been defined. Therefore, data quality cannot be verified, based on those QA principles required by the Agency in a centrally managed QA program, even though the State has good analytical capability.

Some progress was made in FY '81. Laboratory methodology documentation and field sampling documentation is approximately 80% complete. No commitment date for completion has been identified by the State. The State has to identify the QA Coordinator, specify duties of the QA Coordinator and the single level of management and location where the QA program is to be place in the organizational structure.

(5) Intensive Survey Program

According to the State, 15 surveys were planned for FY 1979, but only 2 were actually completed. Those that were completed were:

Segment 47-Lower Sugar Creek, Montgomery and
Parke Counties, Indiana

Segment 16 on Cedar Creek in Lake County

The State has indicated that record high flow periods hampered completion of the remainder of the planned surveys.

Abstracts were completed for the surveys performed and submitted to the Water Monitoring Staff, Surveillance and Analysis Division. These abstracts show that the surveys were conducted in accordance with the requirement of the Basic Water monitoring Program.

(6) Effluent Monitoring Program

Indiana has 97 municipal, 6 federal and 65 non-municipal major dischargers. Inspections planned and completed during FY 79 were as follows:

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	48	
Municipal		36
Non-Municipal		28
Federal	0	1

	Projected	Accomplished
Compliance Evaluation Inspections (CEI)	80	
Municipal		43
Non-Municipal		18
Federal	0	0
Toxics	5	
Municipal		0
Non-Municipal		0

As indicated, commitments were not made to complete a sampling (CSI) or evaluation (CEI) at all major dischargers during FY 1979. The State exceeded their commitment for CSI surveys, completing 64 against 48 committed. However, they did not meet their commitment for CEI surveys and toxics. Only 61 CEI surveys were completed against a commitment of 80. No toxic surveys were completed. Commitments were not made to complete any federal inspections; however, one CSI was completed at a major federal discharger.

It should be noted that the results of compliance monitoring for FY 79 (State and Federal) reveals 81% of municipal and 85% of non-municipals were in compliance with their permits. The commitment and accomplishments for inspections is adequate considering the State's staffing deficiencies. Their performance in submitting the required NPDES compliance forms after each inspection is satisfactory. The follow-up enforcement action resulting from deficiency letters is considered good.

No commitments were made for CEIs or CSIs at any minor discharger.

(7) Proposed Biological Monitoring Program

The biological monitoring program for Indiana for FY 79 may be summarized as follows:

National Ambient Monitoring Program for 1979	Yes	No
Fish samples at all stations	X	
Macroinvertebrates at all stations	X	
Periphyton at all stations		X
Plankton at all stations		X

Indiana collected macroinvertebrate and fish samples at all 21 core network stations, and plankton from 10 stations in 1979. Periphyton were not collected.

Fish samples are analyzed by the Indiana State Board of Health. Parameter coverage is in conformance with the requirements of the Basic Ambient Monitoring Program. The state did not complete all of the proposed biological monitoring for FY 1979; however, the biological work that was done was of acceptable quality.

(8) Data Interpretation and Reporting

Ambient Data

The State of Indiana submitted their ambient water quality data into the STORET system. However, based on a sampling of the National Ambient Stations, data were submitted on a 6-month basis rather than quarterly . In addition, no toxic data have been entered into STORET.

Effluent Data

Upon completion of an inspection, the state submitted a report of each sampling and evaluation inspection of a major discharger to Enforcement Division.

Intensive Survey Data

Abstracts were submitted for the two intensive surveys completed in FY 1979.

Section 305 (b) Report

Utilizing the Section 305 (b) reporting process, the State completed and submitted biennially to the USEPA a report describing the status of the waters of the State. The latest report submitted was for the years 1978-79.

INDIANA

FY 80 LIST OF MAJOR DISCHARGERS

September 1979

INDUSTRIAL

	Name	Location	Permit No.	Expiration Date
1.	ALCOA	Newburgh	IN 0001155	12/20/79
2.	Allegheny Ludlum Steel	New Castle	IN 0045284	9/30/80
3.	American Maize	Hammond	IN 0000027	*
4.	American Oil Company	Whiting	IN 0000108	*
5.	Bethlehem Steel Corporation	Portage	IN 0000175	11/29/79
6.	Bunge Corporation	Clymers	IN 0037958	12/31/79
7.	Central Soya	Decatur	IN 0000591	9/30/83
8.	C.F. Industries	Terre Haute	IN 0001546	12/31/83
9.	Colgate Palmolive	Clarksville	IN 0003638	10/31/79
10.	Dana Corporation	Fort Wayne	IN 0000388	6/30/81
11.	Dana Corporation	Hagerstown	IN 0001929	6/30/81
12.	Delta Faucet	Greensburg	IN 0032352	12/31/79
13.	E.I. du Pont de Nemours	East Chicago	IN 0000329	6/30/81
14.	Eli Lilly and Company	Clinton	IN 0002852	12/19/79
15.	Eli Lilly and Company	Lafayette	IN 0002861	12/19/79
16.	Emge Packing	Fort Branch	IN 0001686	9/30/80
17.	Energy Cooperative, Inc.	East Chicago	IN 0000051	3/31/81
18.	Extruded Alloys	Bedford	IN 0001066	3/31/80
19.	General Electric	Mt. Vernon	IN 0002101	12/31/79
20.	GMC-Central Foundry	Bedford	IN 0003573	*
21.	GMC-Detroit Diesel Allison	Indianapolis	IN 0001813	3/31/80
22.	Gentner Packing Company	South Bend	IN 0000884	5/31/80
23.	IMC Chemical	Terre Haute	IN 0003328	6/30/81
24.	Indiana Farm Bureau Co-op.	Mount Vernon	IN 0002470	3/31/80
25.	Inland Container Corp.	Newport	IN 0036447	5/31/80
26.	Inland Steel Company	East Chicago	IN 0000094	11/29/79
27.	Laketon Asphalt	Laketon	IN 0001244	9/30/80
28.	Lever Brothers	Hammond	IN 0000264	4/1/80
29.	Louisville Cement	Speed	IN 0002071	5/1/80
30.	Mid-State Steel and Wire	Crawfordsville	IN 0002445	3/31/80
31.	Minnesota Mining & Mfg.	Hartford City	IN 0002321	4/30/82
32.	Morgan Packing Company	Austin	IN 0021911	12/31/79
33.	National Steel Corporation	Portage	IN 0000337	*
34.	Penn Dixie Steel	Kokomo	IN 0002909	9/30/80
35.	Olin Corporation	Covington	IN 0001414	6/30/80
36.	Pfizer and Company	Terre Haute	IN 0003581	6/30/81
37.	Union Carbide	Gary	IN 0000035	*
38.	U.S. Steel Corporation	Gary	IN 0000281	10/31/79
39.	Weston Paper Company	Terre Haute	IN 0003026	*
40.	Youngstown Sheet & Tube	East Chicago	IN 0000205	10/31/79
41.	Inter Royal Corporation	Michigan City	IN 0032565	3/31/80
42.	Sheller Globe Corporation	Union City	IN 0003107	6/23/80
43.	Du-Well Metal Products	Morristown	IN 0109541	10/31/81

* Expiration date will be determined after the permit is issued.

ATTACHMENT 1

September 1979

POWER PLANTS

	Name	Location	Permit No.	Expiration Date
1.	Commonwealth Edison	State Line	IN 0000221	10/01/79
2.	Hoosier Energy	Petersburg	IN 0004391	*
3.	Indianapolis Power and Light	Petersburg	IN 0002887	*
4.	Indianapolis Power and Light	Stout	IN 0004685	11/30/79
5.	Indianapolis Power and Light	Pritchard	IN 0004693	9/30/79
6.	Indiana-Kentucky Electric	Clifty Creek	IN 0001759	12/22/79
7.	Indiana-Michigan Electric	Twin Branch	IN 0000493	*
8.	Indiana-Michigan Electric	Tanners Creek	IN 0002160	12/15/79
9.	Indiana-Michigan Electric	Breed	IN 0002178	12/21/79
10.	Logansport Electric	Logansport	IN 0041246	5/30/80
11.	No. Indiana Public Service	Michigan City	IN 0000116	*
12.	No. Indiana Public Service	Gary	IN 0000124	*
13.	No. Indiana Public Service	Bailly	IN 0000132	*
14.	No. Indiana Public Service	Wheatfield	IN 0053201	3/31/81
15.	Peru Electric	Peru	IN 0044130	4/30/80
16.	Public Service of Indiana	Noblesville	IN 0002801	*
17.	Public Service of Indiana	Edwardsport	IN 0002780	11/30/79
18.	Public Service of Indiana	Cayuga	IN 0002763	10/01/79
).	Public Service of Indiana	Gallagher	IN 0002798	9/30/79
20.	Public Service of Indiana	Wabash River	IN 0002810	*
21.	So. Indiana Gas & Electric	Newburgh	IN 0002259	*
22.	So. Indiana Gas & Electric	New Franklin	IN 0052191	9/30/83

* Dates will be determined following reissuance

September 1979

INDIANA

FY 1980 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
1.	Alexandria	Alexandria	IN 0020044	*
2.	Anderson	Anderson	IN 0032476	11/30/79
3.	Angola	Angola	IN 0021296	3/31/84
4.	Auburn	Auburn	IN 0020672	12/31/79
5.	Bedford	Bedford	IN 0025623	10/31/81
6.	Bloomington N	Bloomington	IN 0035726	12/31/81
7.	Bloomington S	Bloomington	IN 0035718	12/31/81
8.	Bluffton	Bluffton	IN 0022411	12/31/79
9.	Brazil	Brazil	IN 0021211	10/31/81
10.	Bremen	Bremen	IN 0020427	9/30/79
11.	Carmel N	Carmel	IN 0039284	3/31/80
12.	Carmel S	Carmel	IN 0022497	*
13.	Charlestown	Charlestown	IN 0020508	12/31/81
14.	Chesterton	Chesterton	IN 0022578	3/31/80
15.	Clarksville N	Clarksville	IN 0020621	12/31/79
16.	Clarksville S	Clarksville	IN 0020613	12/31/79
17.	Columbia City	Columbia City	IN 0022624	12/31/79
18.	Columbus	Columbus	IN 0032573	12/31/79
19.	Connersville	Connersville	IN 0032336	11/01/79
20.	Corydon	Corydon	IN 0020893	1/31/82
21.	Crawfordsville	Crawfordsville	IN 0032964	5/31/82
22.	Crown Point	Crown Point	IN 0025763	12/31/79
23.	Decatur	Decatur	IN 0039314	12/31/79
24.	East Chicago	East Chicago	IN 0022829	5/31/82
25.	Elkhart	Elkhart	IN 0025674	9/30/79
26.	Elwood	Elwood	IN 0032719	9/15/79
27.	Evansville E	Evansville	IN 0033073	10/15/79
28.	Evansville W	Evansville	IN 0032956	10/15/79
29.	Fort Wayne	Fort Wayne	IN 0032191	12/31/79
30.	Frankfort	Frankfort	IN 0022934	11/01/79
31.	Franklin	Franklin	IN 0021181	9/15/79
32.	Gary	Gary	IN 0022977	4/30/82
33.	Goshen	Goshen	IN 0025755	*
34.	Greencastle	Greencastle	IN 0021032	10/15/79
35.	Greenfield	Greenfield	IN 0020109	10/31/81
36.	Greensburg	Greensburg	IN 0020133	12/31/79
37.	Greenwood S	Greenwood	IN 0032204	9/30/79
38.	Hartford City E	Hartford City	IN 0021610	12/31/79
39.	Hartford City W	Hartford City	IN 0021628	12/31/79
40.	Hammond	Hammond	IN 0023060	6/30/83
41.	Hobart	Hobart	IN 0023086	9/30/79

INDIANA

FY 1980 List of Major Dischargers (Cont.)

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
42.	Huntington	Huntington	IN 0023132	11/30/81
43.	Indianapolis N	Indianapolis	IN 0023183	12/31/79
44.	Indianapolis S	Indianapolis	IN 0031950	12/31/79
45.	Jasper	Jasper	IN 0020834	*
46.	Jeffersonville	Jeffersonville	IN 0023302	11/30/79
47.	Kendallville	Kendallville	IN 0020656	*
48.	Kokomo	Kokomo	IN 0032875	12/31/81
49.	Lafayette	Lafayette	IN 0032468	9/30/79
50.	La Porte	La Porte	IN 0025577	9/15/79
51.	Lawrence	Lawrence	IN 0023574	3/31/82
52.	Lebanon	Lebanon	IN 0020818	10/31/81
53.	Logansport	Logansport	IN 0023604	4/30/82
54.	Lowell	Lowell	IN 0023621	1/01/80
55.	Madison	Madison	IN 0025666	*
56.	Marion	Marion	IN 0025585	2/28/82
57.	Martinsville	Martinsville	IN 0020303	3/31/82
58.	Michigan City	Michigan City	IN 0023752	10/15/79
59.	Mishawaka	Mishawaka	IN 0025640	1/31/82
60.	Mooresville	Mooresville	IN 0023825	3/31/80
61.	Mt. Vernon	Mt. Vernon	IN 0035696	12/31/79
62.	Muncie Sanitary District	Muncie	IN 0025631	11/30/79
63.	New Albany	New Albany	IN 0023884	9/30/79
64.	New Haven	New Haven	IN 0020346	3/31/82
65.	New Castle	New Castle	IN 0023914	11/30/79
66.	Newburgh	Newburgh	IN 0023892	12/31/79
67.	Noblesville	Noblesville	IN 0020168	11/30/79
68.	North Vernon	North Vernon	IN 0020451	*
69.	North Manchester	North Manchester	IN 0020362	12/31/79
70.	Peru	Peru	IN 0032328	10/15/79
71.	Plymouth	Plymouth	IN 0020991	1/31/82
72.	Plainfield	Plainfield	IN 0021202	3/31/82
73.	Portage	Portage	IN 0024368	3/31/82
74.	Princeton	Princeton	IN 0024392	12/31/79
75.	Portland	Portland	IN 0020095	*
76.	Richmond Sanitary District	Richmond	IN 0025615	11/30/79
77.	Rochester	Rochester	IN 0021661	1/31/82
78.	Rushville	Rushville	IN 0021270	11/30/82
79.	Salem	Salem	IN 0021644	*
80.	Scottsburg	Scottsburg	IN 0020397	3/31/82
81.	Schererville	Schererville	IN 0024457	6/30/80
82.	Seymour	Seymour	IN 0024473	12/31/81
83.	Shelbyville	Shelbyville	IN 0032867	1/31/82
84.	South Bend	South Bend	IN 0024520	9/30/79
85.	South Dearborn S. D.	South Dearborn	IN 0024538	10/31/79

INDIANA

FY 1980 List of Major Dischargers (Cont.)

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
86.	Speedway	Speedway	IN 0032972	12/31/79
87.	Tell City	Tell City	IN 0021016	3/31/82
88.	Terre Haute	Terre Haute	IN 0025607	*
89.	Tipton	Tipton	IN 0021474	1/31/80
90.	Union City	Union City	IN 0020982	6/30/82
91.	Valparaiso	Valparaiso	IN 0024660	9/30/79
92.	Vincennes	Vincennes	IN 0031020	*
93.	Wabash	Wabash	IN 0024741	10/15/79
94.	Warsaw	Warsaw	IN 0024805	1/31/82
95.	Washington	Washington	IN 0025658	10/31/81
96.	West Lafayette	West Lafayette	IN 0024821	9/30/79
97.	Winchester	Winchester	IN 0021024	12/31/79

FEDERAL

	Name	Location	Permit No.	Expiration Date
1.	U.S. Naval Ammunition Depot	Crane	IN 0035157	*
2.	U.S. Army-Fort Benjamin Harrison	Indianapolis	IN 0033456	*
3.	U.S. Army Ammunition Plant	Charlestown	IN 0001163	*
4.	U.S. Army, Jefferson Proving Grounds	Madison	IN 0024210	*
5.	U.S. Air Force, Grissom Air Force Base	Grissom	IN 0024902	11/22/79
6.	U.S. Navy-Crane Ammunition Depot	Crane STP	IN 0021539	*

* Dates will be determined following reissuance.

c. MICHIGAN

(1) Overview

There are two principal agencies in Michigan involved in ambient monitoring. They are the Michigan Department of Natural Resources (MDNR) and the U.S. Geological Survey (USGS). The coverage provided by these networks meets the explicit intent of the Basic Monitoring Program. The program is intended to provide a data base which is representative of national water quality and trends. Considering sampling parameters and frequency, there is no duplication in these networks. However, Michigan's program has minor deficiencies with respect to the Basic Monitoring Program in regard to effluent monitoring and quality assurance.

(2) Assessment of the State Monitoring Program

The Michigan Department of Natural Resources operates two fixed station networks. One is the basic network consisting of 36 National Ambient Monitoring Stations. The second is a State network consisting of six continuous water quality monitoring programs which encompass approximately 135 different sampling stations in the upper and lower peninsulas. These networks are presented in Figures 7 thru 10. As displayed, the networks provide very broad coverage of the State's waters. An evaluation of each of these networks, together with the USGS networks, is presented below.

In addition to the monitoring networks, the following programs are also evaluated: intensive surveys, effluent monitoring, proposed biological monitoring, quality assurance, and data interpretation and reporting.

(a) National Ambient Monitoring Network

The Michigan Department of Natural Resources operates a network of 36 National Ambient Water Quality Monitoring stations. These stations are tabulated in Table 5 below and are described in Figures 7 and 8.

TABLE 5
NATIONAL AMBIENT MONITORING STATIONS - MICHIGAN

Location	Station No.
Pere Marquette River @ Reek Rd.	530028
Muskegon River at M-66	670055
Thunder Bay River @ Herron Rd. AT M-123	040049
Tahquamenon River	170007
Au Sable River at REA Road	350061
Ontonagon River at U.S. 45 Bridge	660007
Menominee River at Power Plant Spillway	550061

72a

MICHIGAN (Lower)

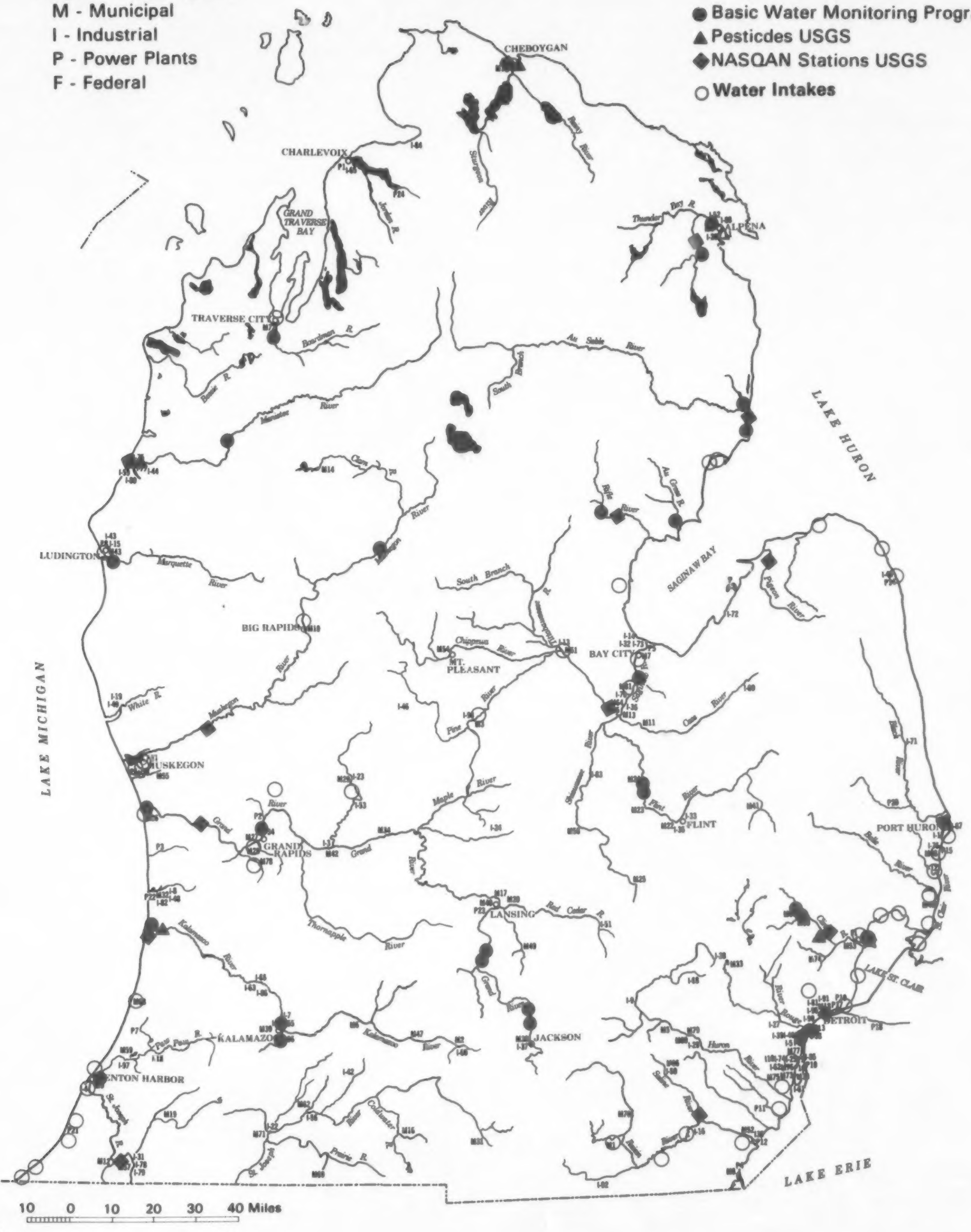
Figure 7: Basic Water Monitoring Network, Pesticides Stations USGS, NASQAN Stations USGS and Water Intakes.

Major Dischargers:

- M - Municipal
- I - Industrial
- P - Power Plants
- F - Federal

Monitoring Stations:

- ● Basic Water Monitoring Program
- ▲ Pesticdes USGS
- ◆ NASQAN Stations USGS
- ○ Water Intakes



CHEBOYGAN
CHARLEVOIX
GRAND TRAVERSE BAY
Sturgeon River
Rainy River
Jordan R.
Thunder Bay R.
ALPENA
TRAVERSE CITY
Boardman R.
Au Sable River
South Branch
Betsie R.
Manistee River
Clam R.
LAKE HURON
Rifle River
Au Gres R.
Muskegon River
LUDINGTON
Marquette River
SAGINAW BAY
Pigeon River
South Branch
BIG RAPIDS
Tittabawassee R.
Chippewa River
MT. PLEASANT
BAY CITY
LAKE MICHIGAN
White R.
Muskegon
Pine River
Cass River
Black River
MUSKEGON
Shiawassee River
Flint River
Maple River
Grand River
GRAND RAPIDS
FLINT
PORT HURON
Belle River
LANSING
Red Cedar R.
Thornapple River
Kalamazoo River
Grand River
LAKE ST. CLAIR
River Rouge
DETROIT
JACKSON
KALAMAZOO
Paw Paw R.
Huron River
BENTON HARBOR
St. Joseph R.
Coldwater R.
Prairie R.
Raisin River
LAKE ERIE
10 0 10 20 30 40 Miles

MICHIGAN (Upper)

Figure 8: Basic Water Monitoring Network, Pesticides Stations USGS, NASQAN Stations USGS, Benchmark USGS and Water Intakes

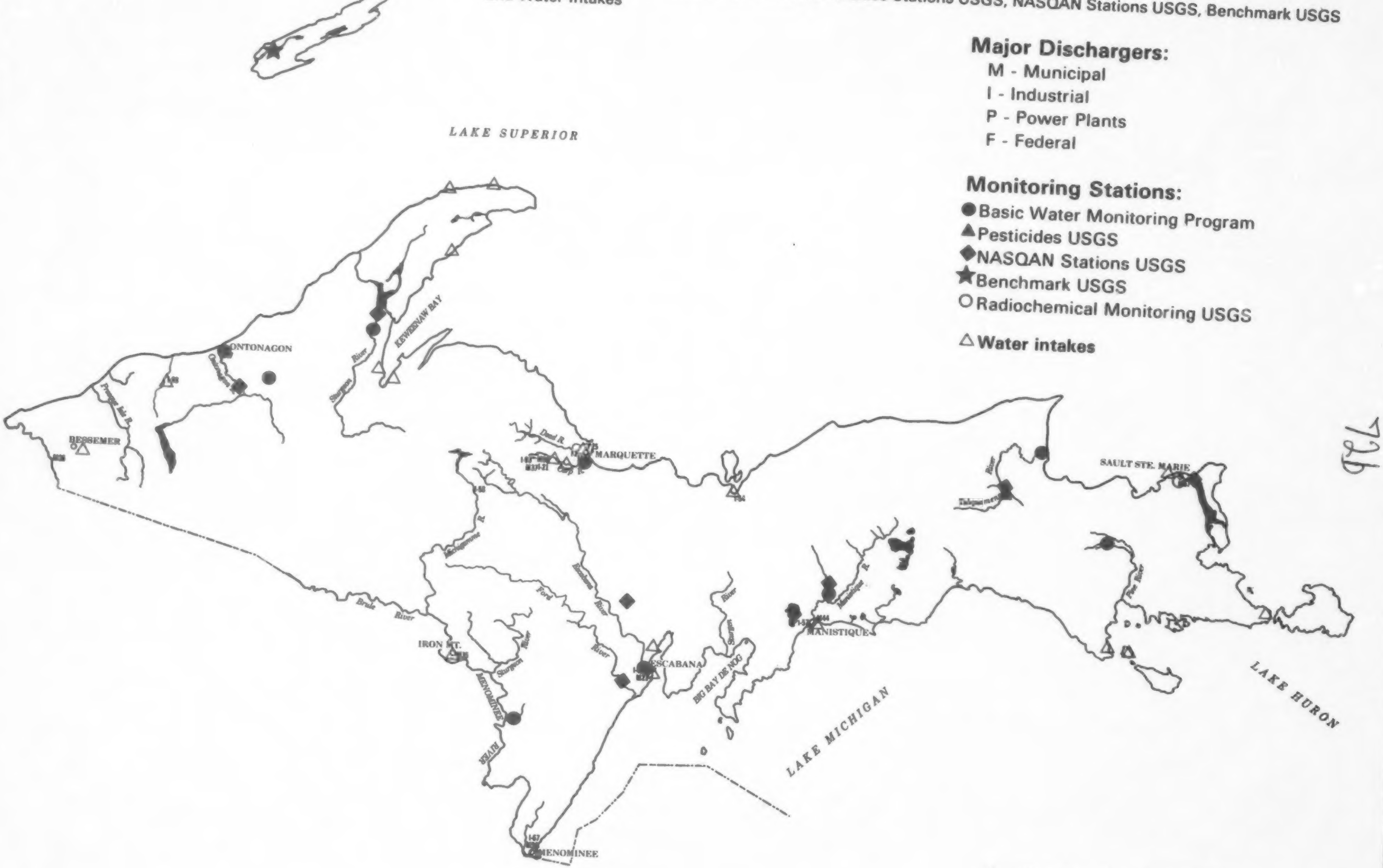

Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● Basic Water Monitoring Program
▲ Pesticides USGS
◆ NASQAN Stations USGS
★ Benchmark USGS
○ Radiochemical Monitoring USGS
△ Water intakes
LAKE SUPERIOR
KEWEENAW BAY
ONTONAGON
BESSEMER
Presque Isle R.
Ontonagon R.
Sturgeon River
Dead R.
MARQUETTE
Michigamme R.
Escanaba River
Ford River
Brule River
IRON MT.
Sturgeon River
MENOMINEE RIVER
ESCABANA
BIG BAY DE NOC
Sturgeon River
MANISTIQUE
Manistique R.
Tahquamenon River
SAULT STE. MARIE
Pine River
LAKE MICHIGAN
LAKE HURON
MENOMINEE
10 0 10 20 30 40 Miles

TABLE 5 (cont'd)
NATIONAL AMBIENT MONITORING STATIONS - MICHIGAN

LOCATION	STATION NO
Manistee River at high Bridge RD.	510017
Kalamazoo River at old US-31	030009
St. Joseph River at C&O RR	110039
Grand River at Mouth	700026
Boardman River at Park Street	280013
Pine River at M-134	490006
Escanaba River at US-41	210030
Carp River at Beside Power Plant Road	520186
Sturgeon River at U.S. - 41	310006
Ontonagon River at Milwaukee R.R. Bridge	660038
Thunder Bay River at 9th street in Alpena	040067
Rifle River at Arenac State Rd.	060007
Augres River at US23	060033
Saginaw River at Midland Street	090162
Van Etten Creek at M-107	350062
Clinton River at Gratiot Ave	500233
Grand River at Knapp Street	410050
Rouge River at W. Jefferson	820070
Grand River at Draper Road	380226
Grand River at Maple Grove Road	380031
Clinton River at M-59	630529
Clinton River at Hamlin Road	630252
Manistique River at Old R.R. Ferry dock (mouth)	770003
Flint River at Carpenter Road	250098
Flint River at Elms Road	256633
Grand River at Creyts Road	230038
Grand River at Webster Road	230028
Kalamazoo River at River Road	390079
Kalamazoo River at D. Avenue	390058

These stations are sited in water use areas such as recreational areas, populated areas, land use areas such as municipal/industrial and agricultural/rural and also relatively clean water areas of concern. Description forms have been submitted for each designated station.

Based on a STORET retrieval of 8 stations, Michigan meets the minimum parameter and sampling frequency specifications of the "Basic Ambient Water Monitoring Program" except for representative fish tissue analysis.

(b) State Monitoring Network

The Michigan Department of Natural Resources primary monitoring network consists of 6 continuous Water Quality Monitoring Programs, as conducted by the Comprehensive Studies Section of the Michigan Department of Natural Resources. The monitoring programs, which encompass approximately 135 different sampling stations in the Upper and Lower Peninsulas, are designed to:

Document water quality trends;

Determine the need for and develop new water quality standards;

Determine the extent of compliance with current water quality standards;

Determine the effects of input from both point and non-point sources;

Evaluate the effectiveness of pollution control programs;

Determine background water quality for streams which are minimally affected by man's activities;

Determine material loadings to the Great Lakes; and

Locate the presence of toxic materials in the State's river systems and document long-term trends.

The 6 continuous water quality monitoring programs are: (1) Detroit River Monitoring Program, (2) Special Monitoring Program, (3) Natural/Background Areas Monitoring Program (4) Urban Areas Monitoring Program, (5) Great Lakes Tributary Monitoring Program and (6) Toxic Materials Monitoring Program. These networks are presented in Figures 9 and 10. Each of these is evaluated below:

1. Detroit River Monitoring Program

The Detroit River Monitoring Program is designed to provide water quality data and constituent loadings in the Detroit River as it flows between Lake St. Clair and Lake Erie. These data are developed by conducting two sampling cruises (runs) during each month from April through November. One monthly run consists of 54 stations sampled at the surface across 10 ranges of the Detroit River from the head to the mouth. The second monthly cruise consists of 20 stations. Ten of these stations are located on the Detroit River mouth, range DT 3.9. The remaining 10 stations are located on ranges DT 30.8 W and DT 30.7 E at the head of the Detroit River. Analytical data obtained along with river flow data are used to determine the loading rates of various constituents at each location in the river.

Samples from all of these stations are analyzed for the parameters required by the Basic Ambient Monitoring Program except representative fish tissue analysis. In addition, a wide variety of heavy metals and toxic organics are analyzed.

MICHIGAN (Lower)

Figure 9: State Monitoring Network and Detroit River Monitoring.

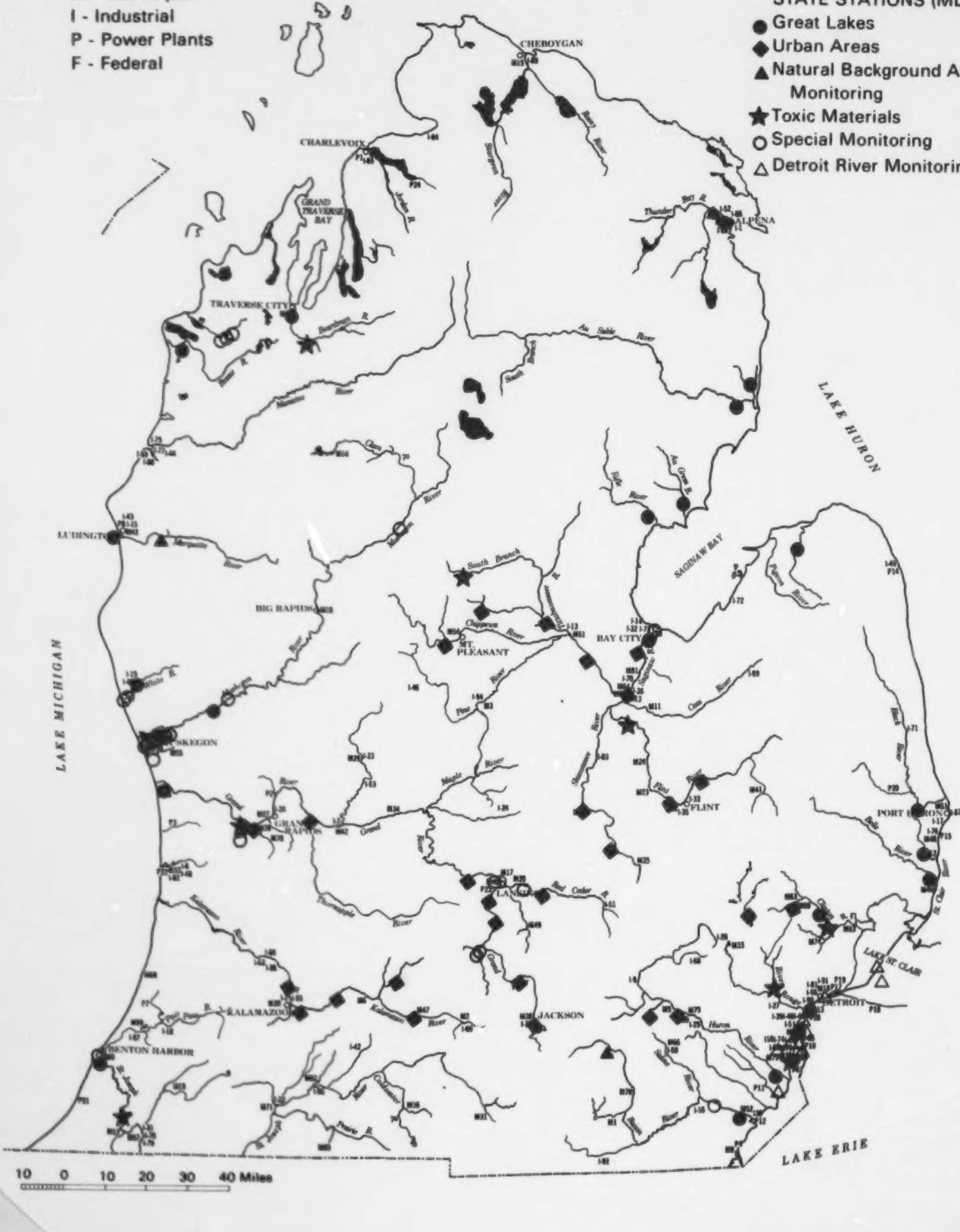
Major Dischargers:

- M - Municipal
- I - Industrial
- P - Power Plants
- F - Federal

Monitoring Stations:

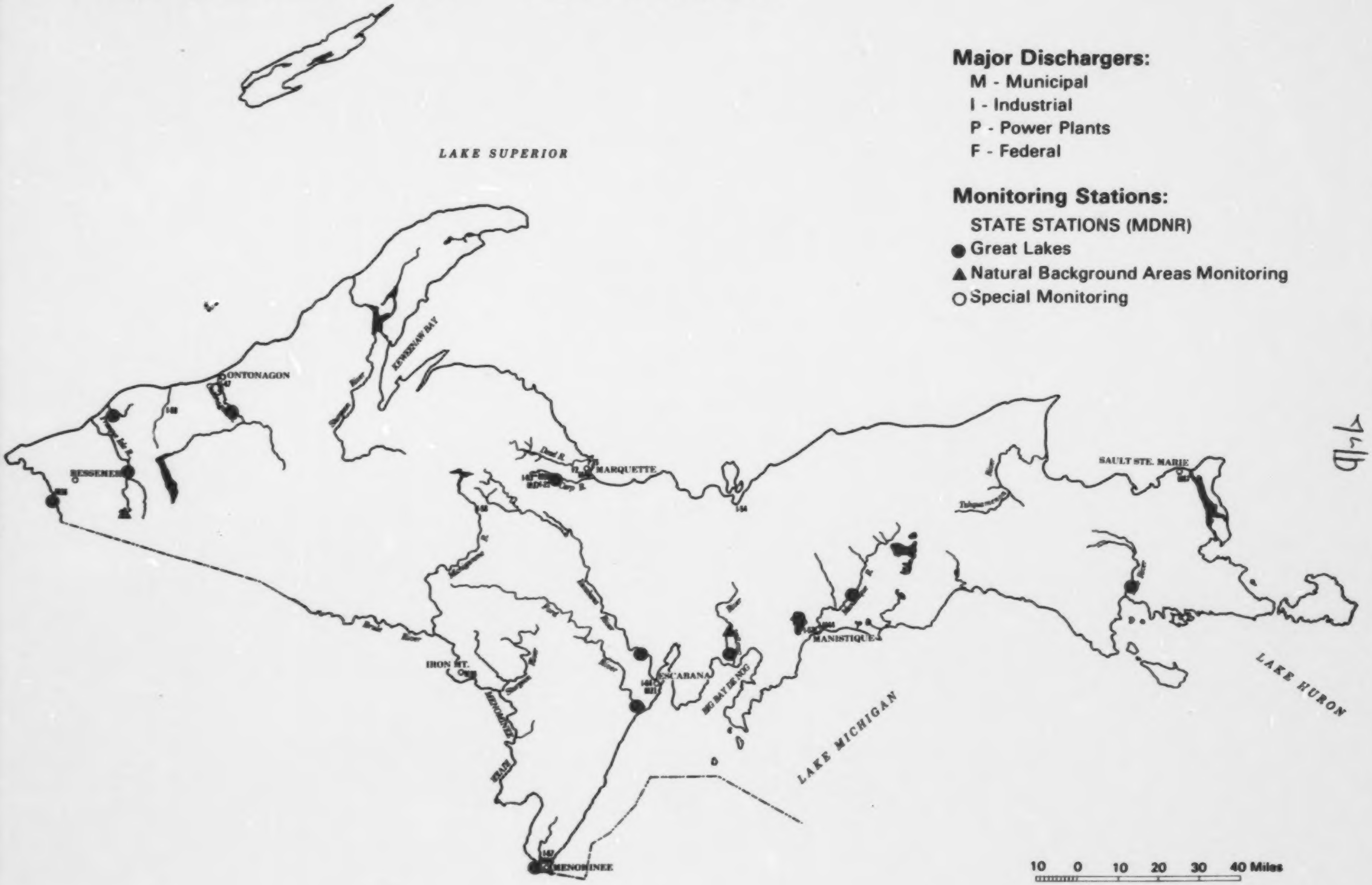
STATE STATIONS (MDNR)

- ● Great Lakes
- ◆ Urban Areas
- ▲ Natural Background Areas Monitoring
- ★ Toxic Materials
- ○ Special Monitoring
- △ Detroit River Monitoring


CHEBOYGAN
CHARLEVOIX
GRAND TRAVERSE BAY
TRAVERSE CITY
ALPENA
Thunder Bay R.
Au Sable River
LAKE HURON
SAGINAW BAY
LUDINGTON
BIG RAPIDS
MT. PLEASANT
BAY CITY
South Branch
Chippewa River
Pine River
Saginaw River
Cass River
Flint River
FLINT
Black River
PORT HURON
St. Clair River
LAKE MICHIGAN
MUSKEGON
Muskegon River
White R.
Grand River
Maple River
GRAND RAPIDS
Thornapple River
LANSING
Red Cedar R.
JACKSON
KALAMAZOO
Kalamazoo River
BENTON HARBOR
St. Joseph River
Huron River
Rouge River
DETROIT
LAKE ST. CLAIR
Raisin River
LAKE ERIE
10 0 10 20 30 40 Miles

MICHIGAN (Upper)

Figure 10: State Monitoring Network.


Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
STATE STATIONS (MDNR)
● Great Lakes
▲ Natural Background Areas Monitoring
○ Special Monitoring
LAKE SUPERIOR
KEWEENAW BAY
ONTONAGON
BESSEMER
MARQUETTE
SAULT STE. MARIE
IRON MT.
MENOMINEE
ESCANABA
BIG BAY DE NOC
MANISTIQUE
LAKE MICHIGAN
LAKE HURON
10 0 10 20 30 40 Miles

2. Special Monitoring Program

The Special Monitoring Program is composed of a number of small monitoring projects, each with individual, precise objectives. The projects are conducted in response to specific monitoring needs, usually on short term basis. They are initiated upon request to the Comprehensive Studies Section by various sections within the department or by outside agencies.

The monitoring projects included under the Special Monitoring Program are: Enforcement Monitoring, Biology Monitoring, Monitoring for Intensive River Studies, National Water Quality Surveillance System (NWQSS), EPA/PLUARG (Pollution from Land Use Activities Reference Group), and Muskegon County Lakes Project. Each of these projects is evaluated below:

a. Enforcement Monitoring: Enforcement monitoring consists of 4 stations in the vicinity of the Muskegon Waste Water Project. This program is designed to evaluate the impact of the project upon water quality. Each station is sampled monthly throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except chemical oxygen demand, flow and representative fish tissue analysis. In addition, a wide variety of heavy metals and toxic organics are analyzed.

b. Biology Monitoring: Monitoring requested by the Water Quality Division, Biology Section, consists of 3 stations on the Platte River. These sites are sampled monthly to determine what influence the Platte River State Fish Hatchery has on river water quality. Each station is sampled monthly throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except chemical oxygen demand, flow and representative fish tissue analysis. In additon, a wide variety of heavy metals are analyzed annually.

c. Monitoring for Intensive River Studies: At the request of the Intensive Rivers Studies Unit of the Comprehensive Studies Section, stations are set up for a five-month period in the vicinity of various dischargers to determine the impact of water quality upon receiving waters. Each station is sampled monthly throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except chemical oxygen demand, flow and representative fish tissue analysis.

d. NWQSS: The National Water Quality Surveillance System (NWQSS) monitoring is used in conjunction with other NWQSS stations across the country to characterize water quality throughout the nation. Two stations located on the Grand River, upstream and downstream of Lansing provide Michigan's water quality data for this system. The stations are sampled twice monthly throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except representative fish tissue analysis. In additon, several heavy metals and miscellaneous inorganics are analyzed.

e. EPA/PLUARG Monitoring: As a followup to the PLUARG studies, EPA has requested the State to include additional parameter coverage at seven existing tributary monitoring stations. These stations are sampled monthly for several heavy metals, and annually for total alkalinity, hardness, sulfate, and fluoride.

f. Muskegon County Lakes Project: The State is involved in a two year coordinated study with Limo-Tech Inc. of Ann Arbor, to evaluate the effects of Muskegon County wastewater diversion and spray irrigation on White, Muskegon, and Mona Lakes in Muskegon County. The monitoring component consists of a total of 10 stations located on the White and Muskegon Rivers, Mosquito and Black Creeks, and at the outlet channels of White, Muskegon and Mona Lakes. Each station is sampled monthly for all of the parameters required for the Basic Ambient Monitoring Program except chemical oxygen demand, flow, and representative fish tissue analysis. Several other chemical parameters are being analyzed on an annual basis, including several heavy metals.

3. Natural/Background Areas Monitoring Program

Fifteen stations on upper and lower peninsula streams make up the Natural/Background Monitoring Program. Data collected under this program are compared to the water quality of streams in urban and industrial areas. These sampling sites are located in areas relatively free from human influence. Each station is sampled monthly throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except flow and representative fish tissue analysis. In addition, 17 metal parameters are analyzed once per year. The mouth of the Ford and Presque Isle Rivers are monitored biennially and will be sampled during Water Year 1980 (WY80). The Manistique River upstream station along with Sturgeon River, Delta County mouth station will be sampled during odd-numbered years.

4. Urban Areas Monitoring Program

The Urban Areas Monitoring Program is designed to document the effect of Michigan's major urban centers on surface water quality. Samples are collected upstream and downstream of 15 urban areas which comprise more than two-thirds of the state's population. The Detroit River, which includes 10 upstream and 10 downstream stations, is sampled by boat twice monthly throughout the year for 20 different chemical, physical and biological parameters. Fifteen additional metal parameters are sampled once a year. Samples from upstream and downstream stations for a given study area are collected on the same day to account for seasonal effects of weather and stream flow. While the chemical parameters analyzed for this program have not been reported to the USEPA, from the program description given it is probable that the sampling program meets the requirements of the Basic Ambient Monitoring Program except for toxics and biological monitoring.

5. Greats Lakes Tributary Monitoring Program

The Tributary Monitoring Program documents seasonal and annual water quality trends, as well as constituent loading rates, for 39 of Michigan's Great Lakes Tributaries. These stations are located near the mouths of the major rivers throughout the state. Of the 39 stations, six will be sampled by the USGS as part of the NASQAN program and four will be sampled on a biennial basis.

Of the four biennial stations, two are sampled during even-numbered years and two during odd-years. The Ford River and the Presque Isle River will be sampled during Water Year - 1980 (WY 80). The Montreal River and the Sturgeon River, Delta County, will be sampled during Water Year-1981 (WY81).

Each station is sampled once a month throughout the year for all of the parameters required for the Basic Ambient Monitoring Program except flow and representative fish tissue analysis. In addition, 15 metal parameters, along with cyanide and phenol, are analyzed once per year. In view of the stated purpose of the program, it should be expanded to include toxic organic analyses.

6. Toxic Materials Monitoring Program

The objective of the Toxic Materials Monitoring Program is to identify the existence of and document long-term trends relating to toxic substances in the water column and sediments of major river systems in Michigan. Parameters to be monitored include pesticides, persistent organic substances and heavy metals. The program has two sampling components: (1) water column sampling for surveillance purposes and 2) water column and sediment sampling for trends analysis.

The toxic materials surveillance sampling program is conducted twice annually during the summer months on major rivers throughout the State. For FY 1979, samples were taken on 15 rivers at single stations at the mouths of the rivers as they flowed into the Great Lakes. Samples were taken of water only.

The toxic materials trends analysis program is conducted on rivers where the existence of toxic materials has been established. For FY 1979, samples were taken on 9 rivers at single sampling stations. Samples were taken of the water and sediment.

To date, these data have not been entered into STORET.

(c) Great Lakes Nearshore Monitoring

MDNR has recently been awarded a grant for Great Lakes surveillance activities for FY 1980. Key elements of the work plan are: Clinton R. - Lake St. Clair nearshore studies, Thunder Bay, St. Ignace and Cheboygan nearshore studies in Lake Huron, Great Lakes tributary loading - flow analysis study, Great Lakes water intake verification analysis and Great Lakes salmon residue monitoring programs. A long - term Great Lakes nearshore monitoring strategy is to be developed by October, 1980. This program is not presented in the Figures.

(d) U.S. Geological Survey

USGS sites in the State of Michigan at which water quality data are collected on a routine repetitive basis have been separated into 7 categories. They are (1) NASQAN Program, (2) NASQAN Radiochemical Subnetwork, (3) NASQAN Pesticides Subnetwork, (4) Hydrologic Benchmark Water Quality Program, (5) Water Temperature Recording Stations, (6) Water quality stations operated in cooperation with the Village of Clarkston, and (7) Water quality stations operated in cooperation with the Washtenaw County Planning Commission. See Figures 7, 8, 11 and 12.

There are several other programs to be operated by USGS for the Michigan District. However, they cannot be evaluated because station location, sampling methods, frequency of sampling and analytical determinations are only tentative at this time.

Each of the USGS programs is described below.

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MICHIGAN (Lower)

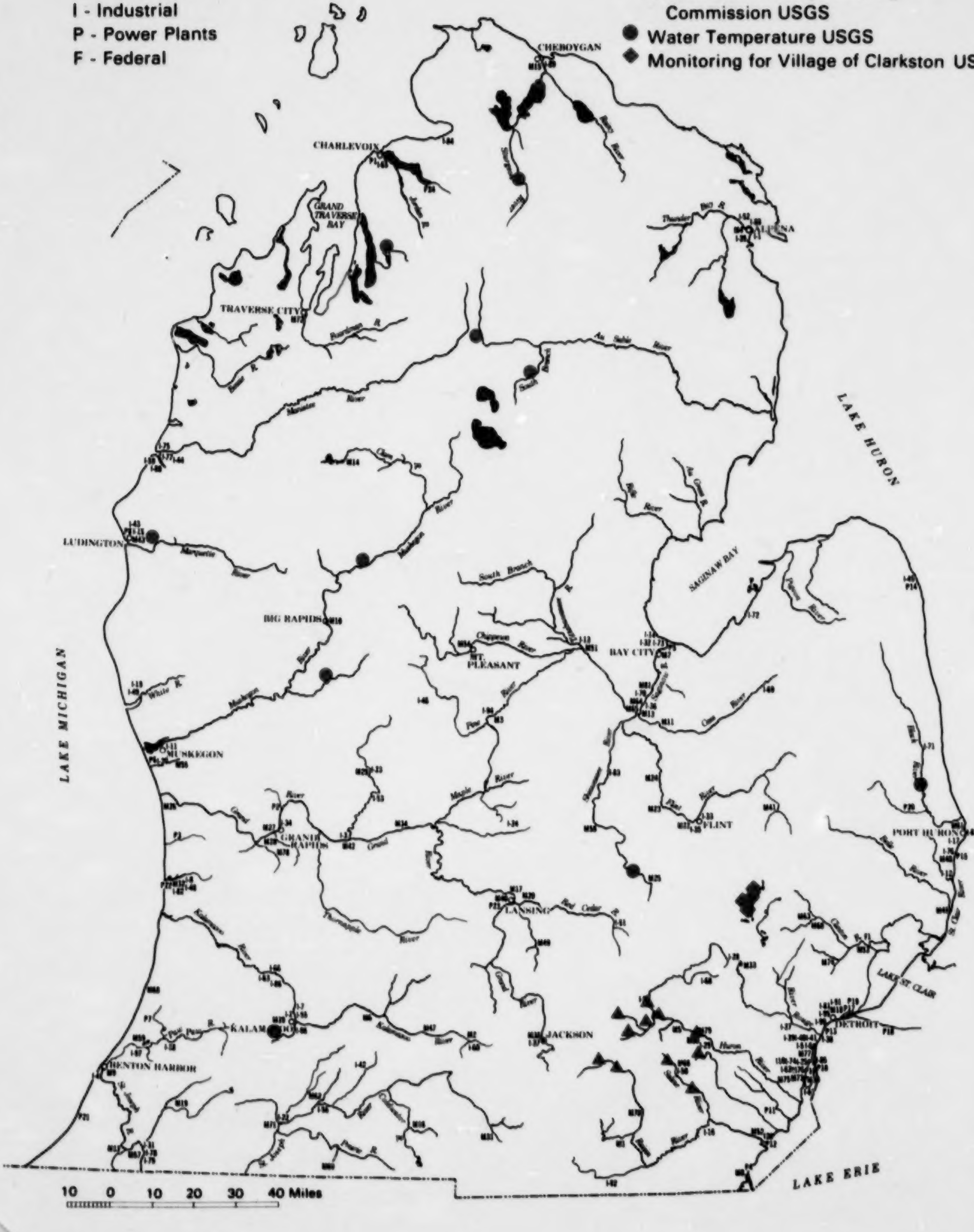
Figure 11: USGS Monitoring Networks.

Major Dischargers:

M - Municipal
I - Industrial
P - Power Plants
F - Federal

Monitoring Stations:

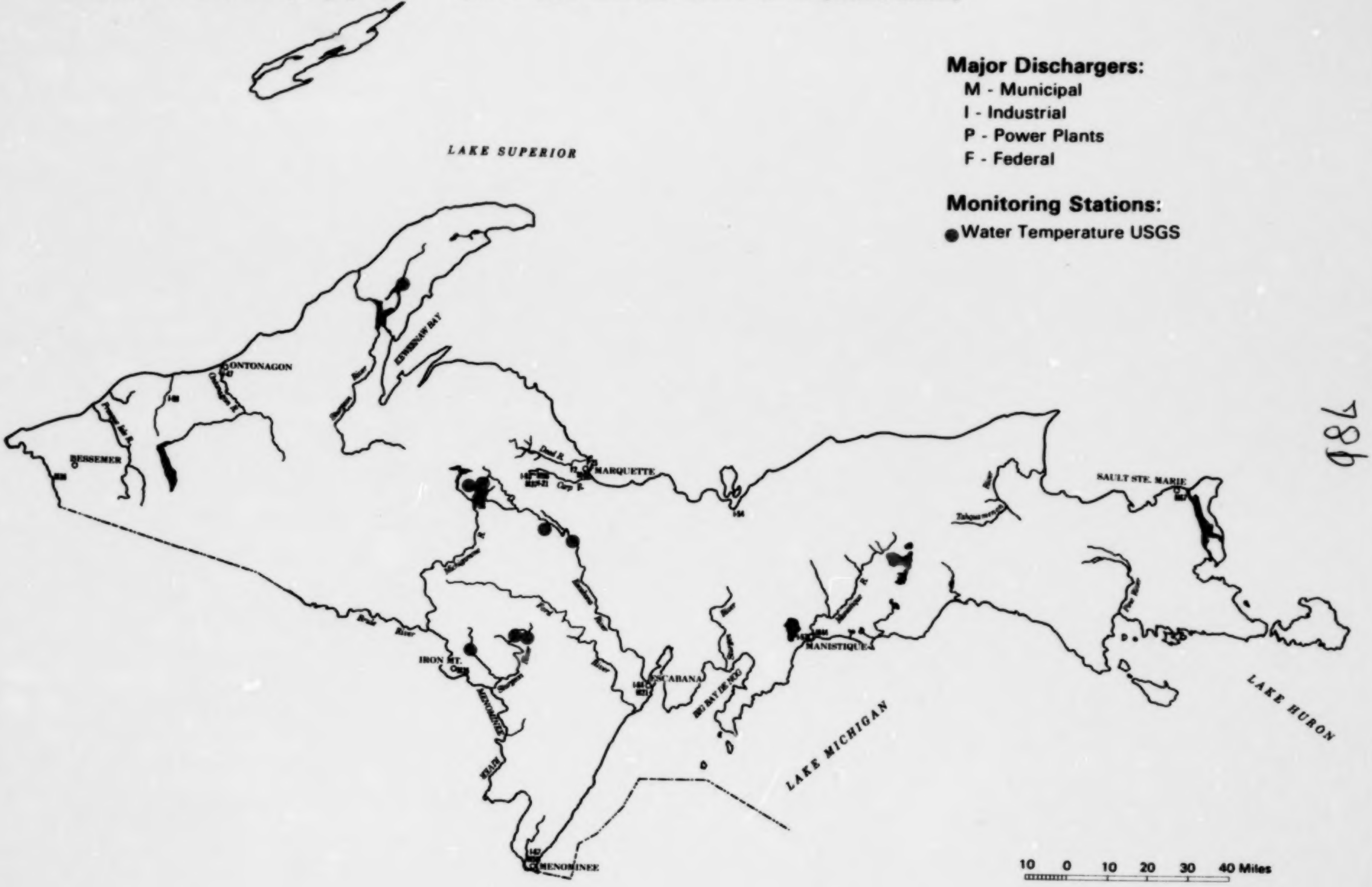
▲ Washtenaw County Planning Commission USGS
● Water Temperature USGS
◆ Monitoring for Village of Clarkston USGS



CHEBOYGAN
CHARLEVOIX
GRAND TRAVERSE BAY
TRAVERSE CITY
ALPENA
Au Sable River
Manistee River
LAKE HURON
LUDINGTON
SAGINAW BAY
BIG RAPIDS
MT. PLEASANT
BAY CITY
LAKE MICHIGAN
Muskegon River
MUSKEGON
FLINT
GRAND RAPIDS
PORT HURON
LANSING
Red Cedar R.
LAKE ST. CLAIR
KALAMAZOO
JACKSON
DETROIT
BENTON HARBOR
Huron River
LAKE ERIE
10 0 10 20 30 40 Miles

MICHIGAN (Upper)

Figure 12: USGS Monitoring Network (Water Temperature Stations).


Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● Water Temperature USGS
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
KEWEENAW BAY
ONTONAGON
BESSEMER
MARQUETTE
SAULT STE. MARIE
MANISTIQUE
ESCABANA
BIG BAY DE NOC
IRON MT.
MENOMINEE
MENOMINEE RIVER
10 0 10 20 30 40 Miles

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1. NASQAN Program

The USGS operates 22 stations in the NASQAN network. One is operated as a NASQAN Radiochemical Subnetwork station and 5 are operated as Pesticides Subnetwork stations. At these stations the following tests are done 12 times per year: water temperature, specific conductance, fecal streptococci, suspended sediment, and other common constituents including major nutrients. Also at these stations, total organic carbon is run 8 times per year, phytoplankton is run 7 times per year, and trace elements, total recoverable silver and periphyton are run 4 times per year. These analyses include the minimum parameter coverage required for the Basic Ambient Monitoring Program, with the exception of fish tissue analysis.

a. NASQAN Radiochemical Subnetwork

Radiochemical samples are collected 2 times per year at high and low flow periods.

b. NASQAN Pesticides Subnetwork

Water samples are collected 4 times per year in November, February, May and August. Bottom material samples are collected in November and May. Sample containers and sample analyses are provided by the EPA laboratory, NSTL station, Mississippi.

2. Hydrologic Benchmark Water - Quality Program

There is one Hydrologic Benchmark Station in Michigan. This station is located in Keweenaw County on Isle Royale. At this station the following tests are done bimonthly: instantaneous discharge, specific conductance, water temperature, pH, dissolved oxygen, total coliform bacteria, fecal coliform bacteria, fecal streptococci bacteria, suspended sediment, and other common constituents. These analyses meet the minimum parameter coverage required by the Basic Ambient Monitoring Program, with the exception of fish tissue analysis.

3. Water Temperature Recording Stations

The USGS operates 20 water - temperatures stations in cooperation with various agencies. The water - temperature stations are distributed throughout the state.

4. Water Quality Stations Operated In Cooperation with the Village of Clarkston.

Four stations have been established on mill ponds at Clarkston, Michigan. Each station will be sampled four times each year. Nutrients, chloride, color, calcium, magnesium, dissolved oxygen, specific conductance, pH, turbidity, fecal streptococci, and fecal coliform will be measured.

5. Water - Quality Stations Operated in Cooperation with the Washtenaw County Planning Commission

Eleven stations have been established in Washtenaw County. At these stations the following tests are done bimonthly: instantaneous discharge, specific conductance, water-temperature, pH, dissolved oxygen, total coliform bacteria, and fecal coliform bacteria. Common constituents, including major nutrients, are also analyzed 2 times per year. Minor elements, total organic carbon and pesticides are run once a year.

These parameters meet the requirements of the Basic Ambient Monitoring Program with the exception of major nutrients (nitrogen and phosphorus) being run twice a year rather than monthly, and representative fish tissue analysis and flow which are not analyzed.

(3) Major Dischargers - Fixed Station Network

A review of Figures 7 thru 12 shows that 47 major dischargers are not being monitored by any network station within 15 miles. Although there are no criteria relating dischargers to downstream monitoring, the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed below in Table 6. A complete listing is presented in the Attachment.

TABLE 6
MAJOR DISCHARGERS NOT MONITORED - MICHIGAN

Discharger

1. Northern Michigan Electric Coop. Advance Steam Plant, Boyne City
2. Cadillac WWTP
3. Mt. Pleasant WWTP
4. Big Rapids WWTP
5. Michigan Sugar Co., Caro
6. Stauffer Chemical, Weston
7. Adrian WWTP

TABLE 6 (Cont'd)
MAJOR DISCHARGES NOT MONITORED - MICHIGAN

8. Tecumseh WWTP
9. Hillsdale WWTP
10. Coldwater WWTP
11. Sturgis WWTP
12. Three Rivers WWTP
13. Essex International, Inc., Three Rivers
14. Hanna Mining Co., Groveland Mine, Pine Creek
15. Lear Siegler Ind., Plastics Div., Mendon
16. Dowagiac WWTP
17. Paw Paw Lake WWTP
18. Du-Wel Metal Products, Hartford
19. Watervliet Paper Co., Watervliet
20. Menasha Corp., Otsego
21. Mead Corp., Otsego
22. Plainwell Paper Co., Plainwell
23. Ionia WWTP
24. Greenville WWTP
25. Federal - Mogul Corp., Greenville
26. Indiana Head Co., Extruded Metal Div., Belding
27. Mason WWTP
28. Federal - Mogul Corp., St. Johns
29. Huron Rouge Sewage Dist., Walled Lake
30. Ford Motor Co., Wixom
31. Michigan Seamless Tube, South Lyon
32. Hoover Universal, Inc., Die Casting Div., Fowlerville
33. Michigan Sugar Co., Croswell
34. Warren WWTP
35. Bedford Township WWTP, Erie
36. Chemetron Corp., Holland
37. Holland Die Casting and Plating Co., Holland
38. Parke - Davis & Co., Holland
39. Holland WWTP
40. Marine City WWTP
41. Marquette WWTP
42. Manistique WWTP
43. Manistique Pulp & Paper, Manistique
44. Morton Salt, Marysville
45. Marysville WWTP
46. Diamond Crystal Salt, St. Clair
47. Detroit Edison Co., Marysville

(4) Intensive Survey Program

The primary objective of Michigans' intensive river studies is to develop timely effluent limits for NPDES permit issuance. To do so, field work and water quality data analysis, including water quality modeling is done. FY 1979 field work has been completed on the following streams:

St. Joseph River below Hillsdale
Ogemaw Creek below West Branch
Raisin River below Tecumseh and Manchester
Bean Creek below Hudson
Montreal River below Ironwood

Abstracts for the River Raisin below Tecumseh study and Bean Creek below Hudson study were submitted to the Surveillance & Analysis Division. The abstracts indicate that the stated objectives for the intensive surveys were achieved. Michigan is one of the few states where intensive survey data are entered into the STORET system.

The intensive survey program has a minor deficiency in that abstracts were submitted for only 2 of the 5 surveys completed.

(5) Effluent Monitoring Program

In the State of Michigan there are 206 major dischargers; 81 municipal, 2 federal and 123 non-municipal. Inspections planned and completed during FY 79 were as follows.

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	100	
Municipal		39
Non-Municipal		58
Federal	0	1
Compliance Evaluation Inspections (CEI)	62	
Municipal		6
Non-Municipal		39
Federal	0	0
Toxics	0	
Municipal		0
Non-Municipal		0

Commitments were not made to complete a CSI or CEI at all major dischargers. Output commitments for FY 1979, were to conduct 100 CSI and 62 CEI surveys. The State did essentially meet their commitment for CSI surveys, completing 98 out of 100 committed. However, they did not meet their commitment for CEI surveys, completing only 45 against a commitment of 62. It should be noted that the results of compliance monitoring (State and Federal) for FY 79 reveals 57% of municipal and 79 percent of non-municipal major dischargers were in compliance with their permits. No commitments were made to complete any federal inspections; however, one CSI was conducted. No commitments were made for toxic surveys, nor for inspections at any minor discharger.

The State effluent monitoring program is effective. However, they are obviously reluctant to submit NPDES compliance forms. In instances where violations were found, appropriate enforcement action was taken by the State.

(6) Proposed Biological Monitoring Program

The State of Michigan did not participate in the Basic Water Monitoring Program for biology in 1979. The last sampling that was done was 1973 through 1978. The data for this period were compiled in a report, and is available through the MDNR.

Michigan is currently in the process of evaluating the biological monitoring program to determine if it will be continued in the future. The general consensus is that it will not be resumed in 1980.

(7) Quality Assurance Program

The State of Michigan has not collated a total quality assurance (QA) document with QA management responsibility identified for the total monitoring effort. Therefore, data quality cannot be verified by the Agency in a centrally managed QA program. During FY 80 the State identified a Quality Assurance committee to develop a quality assurance program. In FY 80 this committee met on an infrequent basis to document the QA program. A tremendous amount of effort is required for completion of this document. All committee members perform other duties that have been given a higher priority. Thus, the QA responsibility is addressed when things are "Slow at the Office". Final documentation is approximately 40% complete. The State has made no commitment on a time frame for completion of program documentation for implementation.

(8) Data Interpretation & Reporting

Using the Section 305(b) reporting process, the State of Michigan has submitted annually a report to the USEPA describing the quality of their waters. The latest report submitted was for the year 1979.

Data Storage and Retrieval

Ambient Data

Except for fish analysis, the State of Michigan submitted their ambient water quality data for storage into the STORET system. The data were submitted quarterly.

Effluent Data

Upon completion of an inspection, the state did not submit a report of each compliance sampling and compliance evaluation inspection of a major permittee to the Enforcement Division.

Intensive Survey Data

Abstracts were not submitted for FY 1979 for all of the intensive surveys completed. However, data are entered into STORET.

MICHIGAN September 1979

FY 1980 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

Name	Location	Permit No.	Expiration Date
1. Abitibi Corporation	Alpena	MI 0002500	12/31/79
2. Allied Paper Inc., Monarch Mill	Kalamazoo	MI 0000779	9/30/79
3. Attwood Corp.	Lowell	MI 0001252	9/30/79
4. Auto Specialties Mfg.	St. Joseph	MI 0002925	9/30/80
5. BASF Wyandotte Co., North Works	Wyandotte	MI 0000540	9/30/79
6. BASF Wyandotte Co., South Works	Wyandotte	MI 0000566	*
7. Brown Co., Specialty Papers Div.	Parchment	MI 0000205	10/31/79
8. Chemetron Corp.	Holland	MI 0000761	*
9. Chrysler Corp., Introl Div.	Scio	MI 0000523	*
10. Chrysler-Trenton Engine	Trenton	MI 0002356	*
11. CWC Textron, Henry St. Complex	Muskegon	MI 0002666	6/30/81
12. Diamond Crystal Salt	St. Clair	MI 0001031	8/31/80
13. Dow Chemical Co.	Midland	MI 0000868	10/31/79
14. Dow Chemical Co.	Bay City	MI 0000655	9/30/79
15. Dow Chemical Co.	Ludington	MI 0003026	10/31/79
16. Dundee Cement Co.	Dundee	MI 0002020	6/30/82
17. Dunn Paper Co.	Port Huron	MI 0003450	7/31/80
18. Du-Wel Metal Products	Hartford	MI 0000281	*
19. E. I. DuPont deNemours & Co.	Montague	MI 0000884	9/30/79
20. East Shore Chemical Co., Inc.	Muskegon	MI 0004031	*
21. Empire Mining Co.	Ishpeming	MI 0000094	12/31/81
22. Essex International, Inc.	Three Rivers	MI 0004561	*
23. Federal - Mogul Corp.	Greenville	MI 0002836	*
24. Federal - Mogul Corp.	St. Johns	MI 0002747	6/30/81
25. Firestone Steel Products	Riverview	MI 0002348	4/30/80
26. Fletcher Paper Co.	Alpena	MI 0004146	12/31/80
27. Ford Motor Co., Rouge Complex	Dearborn	MI 0003361	10/31/79
28. Ford Motor Co.	Wixom	MI 0028151	12/31/79
29. Ford Motor Co.	Ypsilanti	MI 0003280	*
30. Ford Motor Co.	Monroe	MI 0003247	9/30/79
31. French Paper Co.	Niles	MI 0003093	3/31/81
32. General Motors- Chevrolet	Bay City	MI 0001121	*
33. General Motors Fischer Body, Coldwater Rd	Flint	MI 0025194	6/30/81
34. General Motors - Diesel Equip. Div.	Grand Rapids	MI 0001236	6/30/81
35. General Motors - Buick	Flint	MI 0001597	10/31/79
36. General Motors, Chev. Metal Cast Plt.	Saginaw	MI 0001139	5/31/80
37. Goodyear Tires Rubber Co.	Jackson	MI 0001899	3/31/81
38. Great Lakes Steel 80" Mill	River Rouge	MI 0026778	9/30/79
39. Great Lakes Steel - Ecorse Rolling Mill	Ecorse	MI 0002313	9/30/79

* Dates will be determined following reissuance

ATTACHMENT 1

FY 1980 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

	Name	Location	Permit No.	Expiration Date
40.	Great Lakes Steel - Zug Island	Ecorse	MI 0026786	10/31/79
41.	Great Lakes Steel - Mich. Steel Plant	Ecorse	MI 0026794	11/30/79
42.	Hanna Mining Co. - Groveland Mine	Pine Creek	MI 0000116	12/31/81
43.	Harbison Walker Refractories	Ludington	MI 0003620	*
44.	Hardy Salt Co.	Manistee	MI 0002461	10/31/80
45.	Hercules, Inc.	Harbor Beach	MI 0000876	10/31/79
46.	Hitachi Magnetics Corp.	Edmore	MI 0027812	*
47.	Hoerner Waldorf Corp.	Ontonagon	MI 0006122	11/30/79
48.	Holland Die Casting & Plating Co.	Holland	MI 0000167	*
49.	Hooker Chemical	Montague	MI 0002631	12/31/81
50.	Hoover Ball & Bearing Co., Universal Die Casting Division	Saline	MI 0003239	9/30/79
51.	Hoover Universal, Inc.,Die Casting Div.	Fowlerville	MI 0003727	*
52.	Huron Cement, Division of National Gypsum Company	Alpena	MI 0001988	6/30/80
53.	Indian Head Co., Extruded Metal Div.	Belding	MI 0002763	11/30/79
54.	Kimberly Clark Corp.	Munising	MI 0000892	12/31/81
55.	Lakeside Refining Co.	Kalamazoo	MI 0003778	*
56.	Lear Siegler, Ind., Plastics Div.	Mendon	MI 0004006	*
57.	Manistique Pulp & Paper Co.	Manistique	MI 0003166	9/30/79
58.	Marquette Iron Mining Co. Republic Mine	Republic	MI 0000078	11/30/80
59.	Martin Marietta Chemicals	Manistee	MI 0004154	7/30/80
60.	McGraw Edison Co.	Albion	MI 0025321	3/31/80
61.	McLouth Steel Corp.	Gibraltar	MI 0004227	9/30/79
62.	McLouth Steel Corp.	Trenton	MI 0002399	*
63.	Mead Corporation	Otsego	MI 0000787	3/31/81
64.	Mead Paper Company, Escanaba Mill	Escanaba	MI 0000027	10/31/79
65.	Medusa Portland Cement	Charlevoix	MI 0003158	*
66.	Menasha Corp.	Otsego	MI 0003824	3/31/81
67.	Menominee Paper Co., Inc.	Menominee	MI 0000060	*
68.	Michigan Seamless Tube Co.	South Lyon	MI 0001902	9/30/80
69.	Michigan Sugar Co.	Caro	MI 0002267	6/30/81
70.	Michigan Sugar Co.	Carrollton	MI 0002224	6/30/81
71.	Michigan Sugar Co.	Croswell	MI 0002542	6/30/81
72.	Michigan Sugar Co.	Sebewaing	MI 0002003	6/30/81
73.	Monitor Sugar Co.	Bay City	MI 0001091	8/31/81
74.	Monsanto Industrial Chemicals Co.	Trenton	MI 0000558	9/30/79
75.	Morton Chemical Co.	Manistee	MI 0002470	*
76.	Morton Salt	Marysville	MI 0001040	5/31/80
77.	Morton Salt	Manistee	MI 0001503	12/31/80
78.	National Standard Company, City Complex	Niles	MI 0039179	12/31/80
79.	National Standard Company, Lake Street Plant	Niles	MI 0027596	*

FY 1980 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

	Name	Location	Permit No.	Expiration Date
80.	Packaging Corp. of America	Filer City	MI 0001171	9/30/79
81.	Parke-Davis & Co.	Detroit	MI 0001945	6/30/81
82.	Parke-Davis & Co.	Holland	MI 0004715	*
83.	Peet Packing Co.	Chesaning	MI 0000311	*
84.	Penn Dixie Cement	Petoskey	MI 0004294	*
85.	Pennwalt Corp., East & West Plants	Wyandotte	MI 0002381	5/30/80
86.	Plainwell Paper Co.	Plainwell	MI 0003794	3/31/81
87.	Port Huron Paper	Port Huron	MI 0002160	3/31/81
88.	Presque Isle Corp.	Alpena	MI 0003468	*
89.	Proctor & Gamble Paper	Cheboygan	MI 0002496	5/31/80
90.	Renaissance Center, Detroit Downtown Development Corp.	Detroit	MI 0024929	12/31/83
91.	Revere Copper & Brass	Detroit	MI 0002372	*
92.	Stauffer Chemical	Weston	MI 0025135	4/30/80
93.	Tilden Mining Co.	Ishpeming	MI 0038369	10/31/81
94.	Total Leonard	Alma	MI 0001066	*
95.	Uniroyal Tire Company	Detroit	MI 0002321	3/31/81
96.	Upjohn Co., Portage Rd.	Kalamazoo	MI 0002941	*
97.	Watervliet Paper Co.	Watervliet	MI 0000817	3/31/81
98.	White Pine Copper Div. Copper Range Company	White Pine	MI 0006114	10/31/79

MICHIGAN

FY 1980 List of Major Dischargers

September 1979

POWER PLANTS

Name	Location	Permit No.	Expiration Date
1. Consumers Power Co., Big Rock Plant	Charlevoix	MI 0001431	8/31/80
2. Consumers Power Co., B. E. Morrow Plant	Comstock	MI 0001384	8/30/80
3. Consumers Power Co., J. H. Campbell Plant	West Olive	MI 0001422	10/31/80
4. Consumers Power Co., J. R. Whiting Plant	Luna Pier	MI 0001864	10/31/79
5. Consumers Power Co., D.E. Karn & J. C. Weadock Plant	Essexville	MI 0001678	10/31/79
6. Consumers Power Co., B. C. Cobb Plant	Muskegon	MI 0001520	10/31/79
7. Consumers Power Co., Palisades Plant	Covert	MI 0001457	9/30/80
8. Consumers Power Co.	Ludington	MI 0035912	5/31/80
9. Detroit Edison Co., Pennsalt Station	Riverview	MI 0001821	12/31/79
10. BASF Wyandotte Corp.. Wyandotte North Station	Wyandotte	MI 0001805	12/31/79
11. Detroit Edison Co., Enrico Fermi #1	Newport	MI 0001830	10/31/79
12. Detroit Edison Co.	Monroe	MI 0001848	10/31/79
13. Detroit Edison Co.	River Rouge	MI 0001724	10/31/79
14. Detroit Edison Co.	Harbor Beach	MI 0001856	10/31/79
15. Detroit Edison Co.	Marysville	MI 0001694	10/31/79
16. Detroit Edison Co.	Trenton	MI 0001791	10/31/79
17. Detroit Edison Co. Delray Plant	Detroit	MI 0001783	10/31/79
18. Detroit Edison Co., St. Clair Plant	Belle River	MI 0001686	10/31/79
19. Detroit Edison Co., Conners Creek Plant	Detroit	MI 0001775	10/31/79
20. Detroit Edison Co., Greenwood #1	Avoca	MI 0036978	1/31/83
21. Indiana & Michigan Power Co. Donald C. Cook Station	Bridgman	MI 0005827	10/31/79
22. James DeYoung Power Plant	Holland	MI 0001473	11/30/79
23. Lansing Board of Water & Light, Otto Eckert Station	Lansing	MI 0004464	*
24. Northern Michigan Elec. Coop. Advance Steam Plant	Boyne City	MI 0003589	11/30/79
25. Upper Peninsula Power Co., Presque Isle Station	Marquette	MI 0006106	10/31/79

MICHIGAN

September 1979

FY 1980 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
1.	Adrian	Adrain	MI 0022152	12/31/81
2.	Albion	Albion	MI 0022161	*
3.	Alma	Alma	MI 0020265	3/31/81
4.	Alpena	Alpena	MI 0022195	*
5.	Ann Arbor	Ann Arbor	MI 0022217	3/31/82
6.	Battle Creek	Battle Creek	MI 0022276	3/31/82
7.	Bay City	Bay City	MI 0022284	3/31/82
8.	Bedford Township	Erie	MI 0020761	*
9.	Benton Harbor - St. Joseph	Benton Harbor	MI 0022322	*
10.	Big Rapids	Big Rapids	MI 0022381	*
11.	Bridgeport	Bridgeport Twp.	MI 0022446	3/31/82
12.	Buchanan	Buchanan	MI 0022489	*
13.	Buena Vista Township	Saginaw County	MI 0022497	3/31/82
14.	Cadillac	Cadillac	MI 0020257	*
15.	Cheboygan	Cheboygan	MI 0020303	3/31/80
16.	Coldwater	Coldwater	MI 0020117	*
17.	Delta Township	Delta Twp.	MI 0022799	3/31/82
18.	Detroit	Detroit	MI 0022802	*
19.	Dowagiac	Dowagiac	MI 0022837	*
20.	East Lansing	East Lansing	MI 0022853	*
21.	Escanaba	Escanaba	MI 0025381	*
22.	Flint	Flint	MI 0022926	*
23.	Flushing	Flushing	MI 0020281	3/31/82
24.	Genesee Co., District #2	Genesee Co.	MI 0022977	3/31/82
25.	Genesee Co., District #3	Genesee Co.	MI 0022993	*
26.	Grand Haven-Spring Lake	Grand Haven	MI 0021245	*
27.	Grand Rapids	Grand Rapids	MI 0026069	*
28.	Grandville	Grandville	MI 0023027	*
29.	Greenville	Greenville	MI 0020397	*
30.	Grosse Ile Twp.	Grosse Ile Twp.	MI 0026191	3/31/82
31.	Hillsdale	Hillsdale	MI 0022136	*
32.	Holland	Holland	MI 0023108	3/31/82
33.	Huron Rouge Sewage Dist. Sys.	Walled Lake	MI 0024287	*
34.	Ionia	Ionia	MI 0021041	3/31/82
35.	Iron Mountain Kingsford	Iron Mountain	MI 0023205	*
36	Ironwood	Ironwood	MI 0020125	3/31/82
37.	Ishpeming	Ishpeming	MI 0021369	3/31/82
38.	Jackson	Jackson	MI 0023256	3/31/82
39.	Kalamazoo	Kalamazoo	MI 0023299	3/31/82
40.	Lansing	Lansing	MI 0023400	3/31/80
41.	Lapeer	Lapeer	MI 0020460	3/31/82
42.	Lowell	Lowell	MI 0020311	9/30/79
43.	Ludington	Ludington	MI 0021334	*
44.	Manistique	Manistique	MI 0023515	*
45.	Marine City	Marine City	MI 0020893	*

* Dates will be determined following reissuance

MICHIGAN

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
46.	Marquette	Marquette	MI 0023531	3/31/82
47.	Marshall	Marshall	MI 0023540	9/30/82
48.	Marysville	Marysville	MI 0020656	*
49.	Mason	Mason	MI 0020435	4/30/82
50.	Menominee	Menominee	MI 0025631	*
51.	Midland	Midland	MI 0023582	3/31/82
52.	Monroe	Monroe	MI 0028401	*
53.	Mt. Clemens City	Mt. Clemens	MI 0023647	*
54.	Mt. Pleasant	Mt. Pleasant	MI 0023655	12/31/81
55.	Muskegon County	Muskegon County	MI 0027391	*
56.	Negaunee	Negaunee	MI 0021296	3/31/82
57.	Niles	Niles	MI 0023701	3/31/82
58.	Owosso	Owosso	MI 0023752	*
59.	Paw Paw Lake	Paw Paw Lake	MI 0023779	*
60.	Pontiac - Auburn Plant East Blvd. Plant	Pontiac	MI 0023825	*
61.	Port Huron	Port Huron	MI 0023833	*
62.	Portage Lake Water & Sewer Authority	Portage Lake	MI 0020061	*
63.	Rochester	Rochester	MI 0023931	3/31/82
64.	Saginaw	Saginaw	MI 0025577	*
65.	Saginaw Township	Saginaw County	MI 0023973	3/31/82
66.	Saline	Saline	MI 0024023	6/30/82
67.	Sault Ste. Marie	Sault Ste. Marie	MI 0024058	3/31/82
68.	South Haven	South Haven	MI 0020320	*
69.	Sturgis	Sturgis	MI 0020451	3/31/82
70.	Tecumseh	Tecumseh	MI 0020583	3/31/82
71.	Three Rivers	Three Rivers	MI 0020991	*
72.	Traverse City	Traverse City	MI 0027481	*
73.	Trenton	Trenton	MI 0021164	*
74.	Warren	Warren	MI 0024295	12/31/79
75.	Wayne County - Flat Rock	Flat Rock	MI 0024325	3/31/82
76.	Wayne County - Trenton	Trenton	MI 0024317	3/31/82
77.	Wayne County - Wyandotte	Wyandotte	MI 0021156	*
78.	Wyoming	Wyoming	MI 0024392	*
79.	Ypsilanti Communtiy Utility Auth. - Ford Lake Plant	Ypsilanti	MI 0024406	3/31/82
80.	Ypsilanti Community Utility Auth. - Willow Run Plant	Ypsilanti	MI 0024422	3/31/82
81.	Zilwaukee	Zilwaukee	MI 0023981	3/31/82

FEDERAL

1.	Selfridge AFB	Mount Clemens	MI 0109991	*
2.	USAF - K.I. Sawyer	Marquette	MI 0021423	*

d. MINNESOTA

(1) Overview

The State of Minnesota has three different agencies involved in ambient water monitoring within the State. These agencies are the Minnesota Pollution Control Agency (MPCA), the U.S. Geological Survey (USGS) and the U.S. Army Corps of Engineers (COE). The coverage provided by these networks meets the explicit intent of the Basic Monitoring Program. The intent of the basic program is to provide a data base which is representative of the national water quality and trends. Considering sampling parameters and frequency, there is no duplication in these networks. However, Minnesota's Basic Monitoring Program has deficiences in the areas of quality assurance, intensive surveys, effluent monitoring and data interpretation and reporting.

(2) Assessment of the State Monitoring Program

The Minnesota Pollution Control Agency operates three fixed station networks in the State of Minnesota. These are (1) the National Ambient Network, consisting of 19 stations, (2) a State monitoring network, consisting of 26 stations, and (3) the National Water Quality Surveillance System network, consisting of 4 stations. Additionally, the USGS operates 3 networks of stations, and the U.S. Army Corps of Engineers operates a network at impoundments. An evaluation of each of these networks is presented below.

In addition to the monitoring networks, the following programs are also evaluated: quality assurance, intensive surveys, effluent monitoring, proposed biological monitoring and data interpretation and reporting.

(a) National Ambient Monitoring Network

The Minnesota Pollution Control Agency operates a network of 19 National Ambient Water Monitoring stations. This network is funded by the USEPA. These stations are listed below in Table 7 and described in Figure 13.

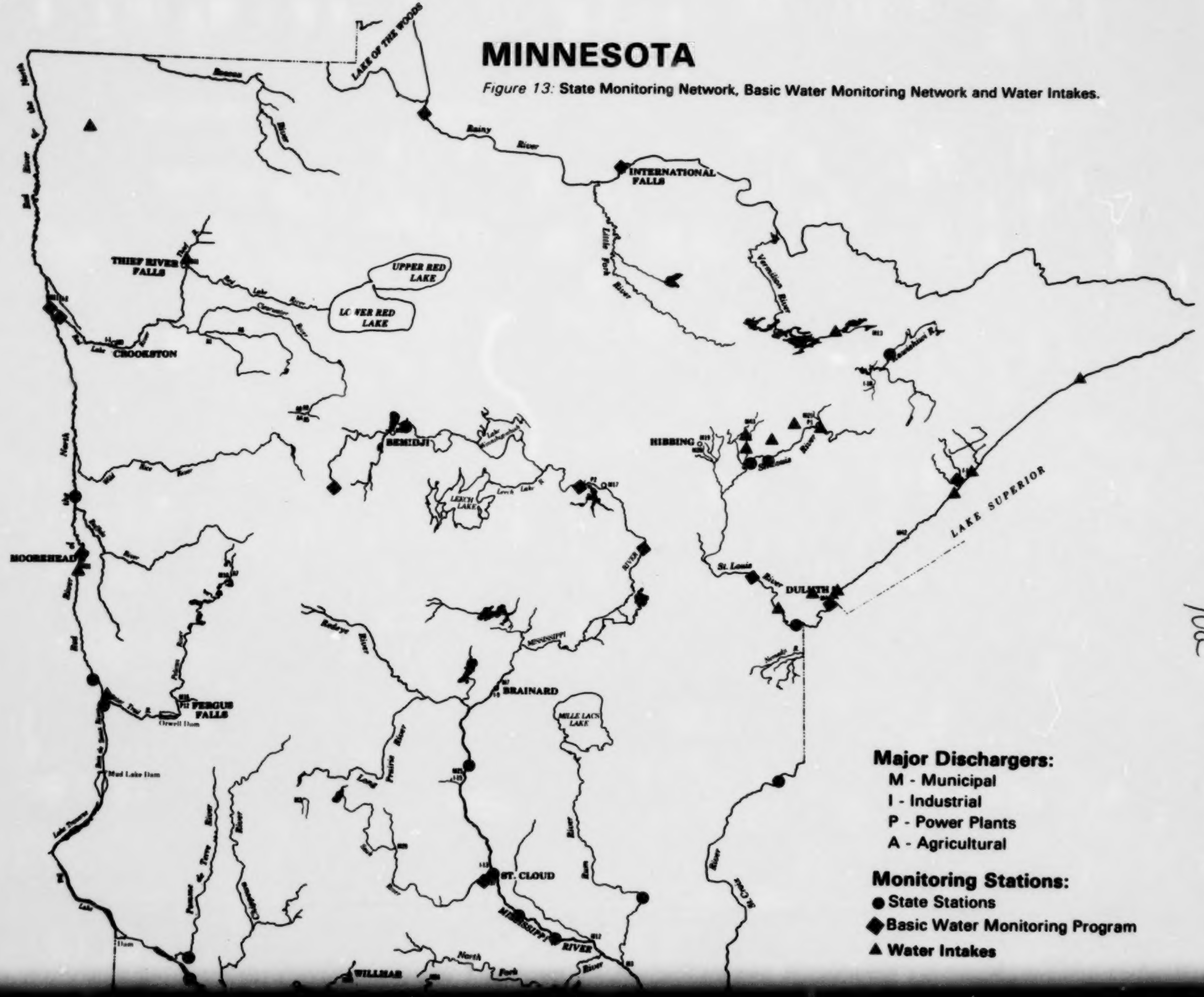
TABLE 7
NATIONAL AMBIENT MONITORING STATIONS - MINNESOTA

Station Location	Station Number
Beaver River, 1 1/2 miles north of Beaver Bay	BV-4
St. Louis Bay, Below interstate 535 bridge, Duluth	SLB-1
Minnesota River, Bridge on SH-19 at Henderson	MI-64
Minnesota River, Bridge on SH-19 and USH-71 at Morton	MI-196
Blue Earth River, At confluence with Minnesota River in Sibley Park above dam, Mankato	BE-0

90a

MINNESOTA

Figure 13: State Monitoring Network, Basic Water Monitoring Network and Water Intakes.


LAKE OF THE WOODS
Rainy River
INTERNATIONAL FALLS
Little Fork River
Vermilion River
THIEF RIVER FALLS
UPPER RED LAKE
LOWER RED LAKE
Red Lake River
CROOKSTON
BEMIDJI
HIBBING
LEECH LAKE
Leech Lake R.
RIVER
MISSISSIPPI
St. Louis River
DULUTH
LAKE SUPERIOR
MOORHEAD
Red River of the North
FERGUS FALLS
Orwell Dam
Mud Lake Dam
BRAINARD
MILLE LACS LAKE
Crow Wing River
Long Prairie River
ST. CLOUD
Rum River
MISSISSIPPI RIVER
North Fork
WILLMAR
Pomme de Terre River
Chippewa River
Lake Traverse
St. Croix River
Dam
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
A - Agricultural
Monitoring Stations:
● State Stations
◆ Basic Water Monitoring Program
▲ Water Intakes

90a

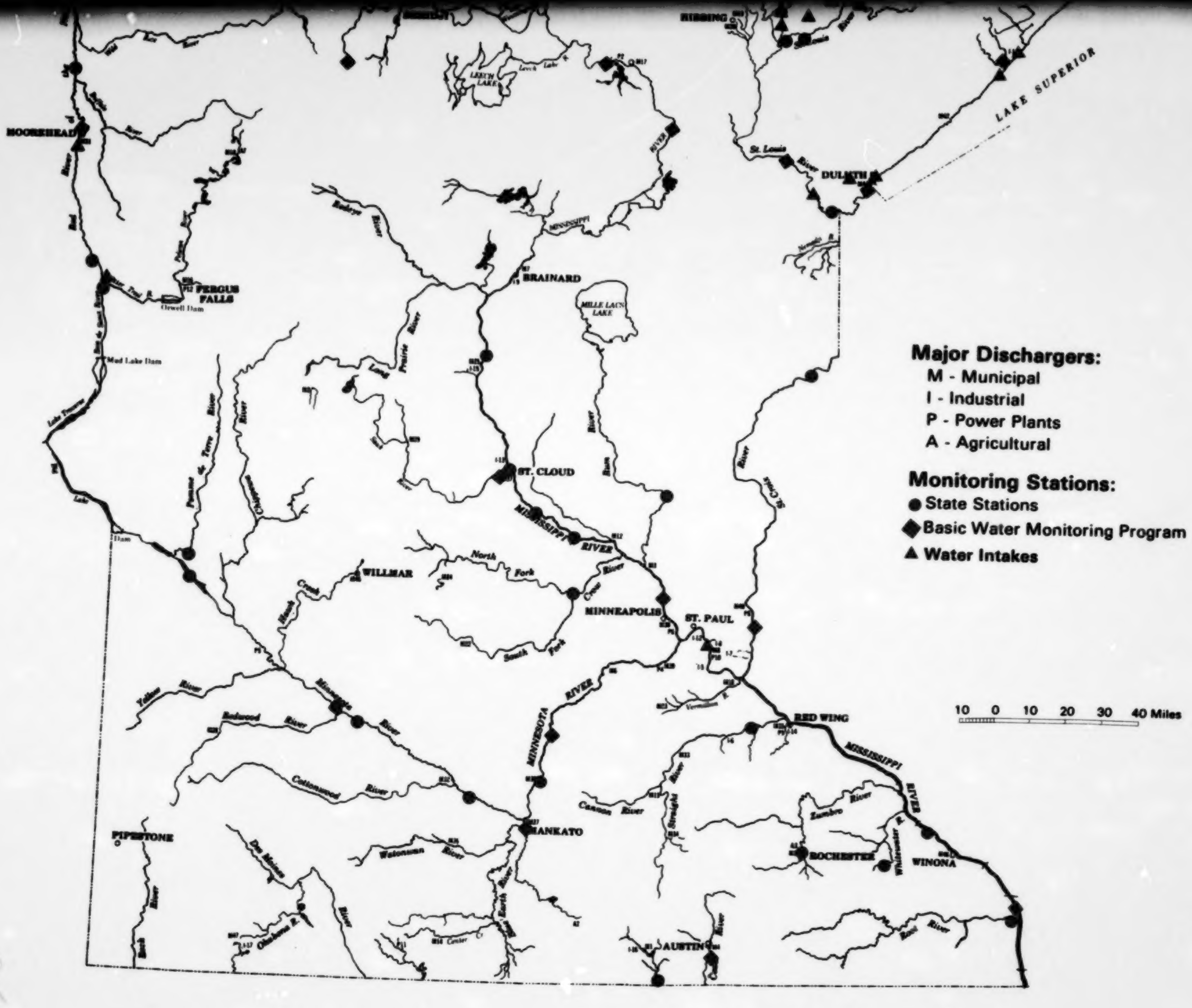

Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
A - Agricultural
Monitoring Stations:
● State Stations
◆ Basic Water Monitoring Program
▲ Water Intakes
10 0 10 20 30 40 Miles
LAKE SUPERIOR
HIBBING
DULUTH
St. Louis River
LEECH LAKE
MOORHEAD
Red River
FERGUS FALLS
Orwell Dam
Mud Lake Dam
BRAINARD
MISSISSIPPI
MILLE LACS LAKE
Prairie River
Long
Rum River
St. Croix River
ST. CLOUD
MISSISSIPPI RIVER
Crow River
North Fork
South Fork
WILLMAR
Chippewa
Pomme de Terre River
Lake
MINNEAPOLIS
ST. PAUL
Vermillion
RED WING
MISSISSIPPI RIVER
MINNESOTA RIVER
Minnesota River
Yellow River
Redwood River
Cottonwood River
Cannon River
Straight River
Zumbro River
ROCHESTER
Whitewater R.
WINONA
MANKATO
Watonwan River
Blue Earth River
Des Moines
PIPESTONE
Rock River
AUSTIN
Root River

TABLE 7 (CONT'D)
NATIONAL AMBIENT MONITORING STATIONS - MINNESOTA

Station Location	STATION NUMBER
Mississippi River, Minneapolis waterworks intake, Fridley	UM-859
Mississippi River, Bridge on SH-200 at Jacobson	UM-1137
Mississippi River, Bridge on SH_6, 6 miles southwest of Cohassett	UM-1186
Mississippi River, Bridge on USH-200, 1/2 mile west of Lake Itasca (town)	UM-1365
Sauk River, Bridge on CSAH-1, north of St. Cloud	SA-0
St. Croix River, C&NW Railway bridge at Hudson, Wisconsin	SC-17
Cedar River, Bridge on CSAH-4, 3 miles south of Austin	CD-10
Red River, at Grand Forks waterworks intake, Alemont Ave South	RE-300
Red River, Bridge on Main Street and 1st Avenue, Fargo, Moorhead	RE-452
Red Lake River, Bridge on SH-200 at East Grand Forks	RL-0.2
Rainy River, International Bridge at Baudette	RA-12
Rainy River, at international toll bridge, International Falls	RA-83
Mississippi River, Bridge on USH-14 at LaCrosse, Wisconsin	UM-698

Based on a STORET retrieval of 6 stations, the parameter coverage and sampling frequency comply with the minimum requirements of the Basic Monitoring Program with the exception of representative fish tissue data which is not presently in STORET. In addition to the minimum parameter list, the State also analyzes many general chemistry and heavy metal parameters. Station description forms have been submitted for each designated station.

(b) State Monitoring Network

In addition to the basic network, the State of Minnesota operates a network of 26 ambient water quality monitoring stations within the State. Most of the stations are located on major rivers and significant tributaries. According to the State, the parameter coverage and frequency of sampling comply with the minimum requirements of the Basic Monitoring Program with the exception of chemical oxygen demand, representative fish tissue analysis and flow, which are not analyzed. In addition to the minimum parameter list, the State also analyzes many heavy metal parameters on an annual basis. These stations are shown in Figure 13.

(c) National Water Quality Surveillance System Network

The State also operates a network of 4 National Water Quality Surveillance System stations. These stations are located on the Blue Earth River and the Mississippi River. According to the State, the parameter coverage and frequency of sampling comply with the minimum requirements of the Basic Monitoring Program with the exception of representative fish tissue analysis and flow, which are not completed. In addition to the minimum parameter list, the State also analyzes many general chemistry and heavy metal parameters on varying sampling schedules. These stations are shown in Figure 14.

(d) U.S. Geological Survey

The USGS operates 3 water quality monitoring networks in the State of Minnesota. These are (1) an ambient water monitoring network, (2) the NASQAN network, and (3) the Hydrologic Benchmark network. These networks are shown in Figure 14 and are discussed in detail below.

1. Ambient Water Quality Monitoring Network

This network consists of 30 stations spread more or less evenly across the State. Parameter coverage and sampling frequency vary from station to station. For the most part, these stations do not meet the minimum requirements for parameter coverage and sampling frequency as prescribed by the Basic Water Monitoring Program. However, at some stations an extensive variety of additional parameters are analyzed, including general chemistry, heavy metals, and toxic organics.

2. NASQAN Network

The NASQAN Network consists of 10 stations, 4 of which are Pesticides Subnetwork stations. Parameter coverage and sampling frequency meet the minimum requirements of the Basic Monitoring Program, with the exception of chemical oxygen demand, and kjeldahl nitrogen, which are not analyzed. Also, at all stations, an extensive variety of additional parameters are analyzed, including general chemistry, heavy metals, periphyton and phytoplankton.

For the Pesticide Subnetwork stations, pesticides are analyzed at the EPA laboratory in Bay St. Louis, Mississippi.

3. Hydrologic Benchmark Network

This network consists of 2 stations: the Kawishi River near Ely, and the North Fork Whitewater River near Elba.

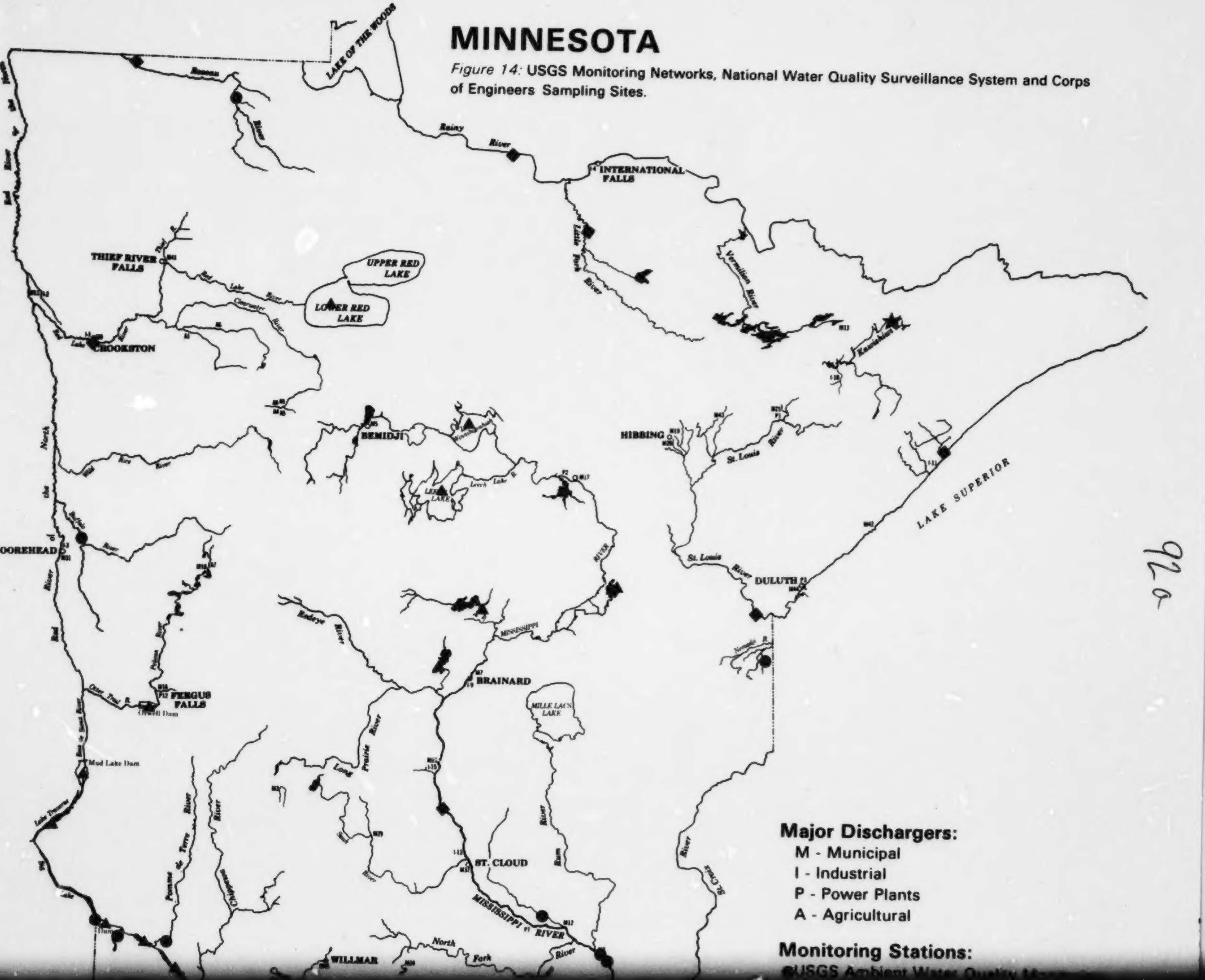
At these stations, parameter coverage and sampling frequency do not meet the minimum requirements of the Basic Water Monitoring Program. However, at the station on the Kawishi River near Ely, an extensive variety of additional general chemistry parameters are analyzed. Also, at the station on the North Fork Whitewater river near Elba, a more extensive variety of additional parameters are analyzed, including general chemistry, heavy metals, toxic organics and radiochemical substances.

(e) U.S. Army Corps of Engineers

The Corps of Engineers monitoring activites in Minnesota are confined only to impoundments. They have no permanent water quality monitoring stations within the State. At the present time the Corps is conducting studies on the following 13 impoundments:

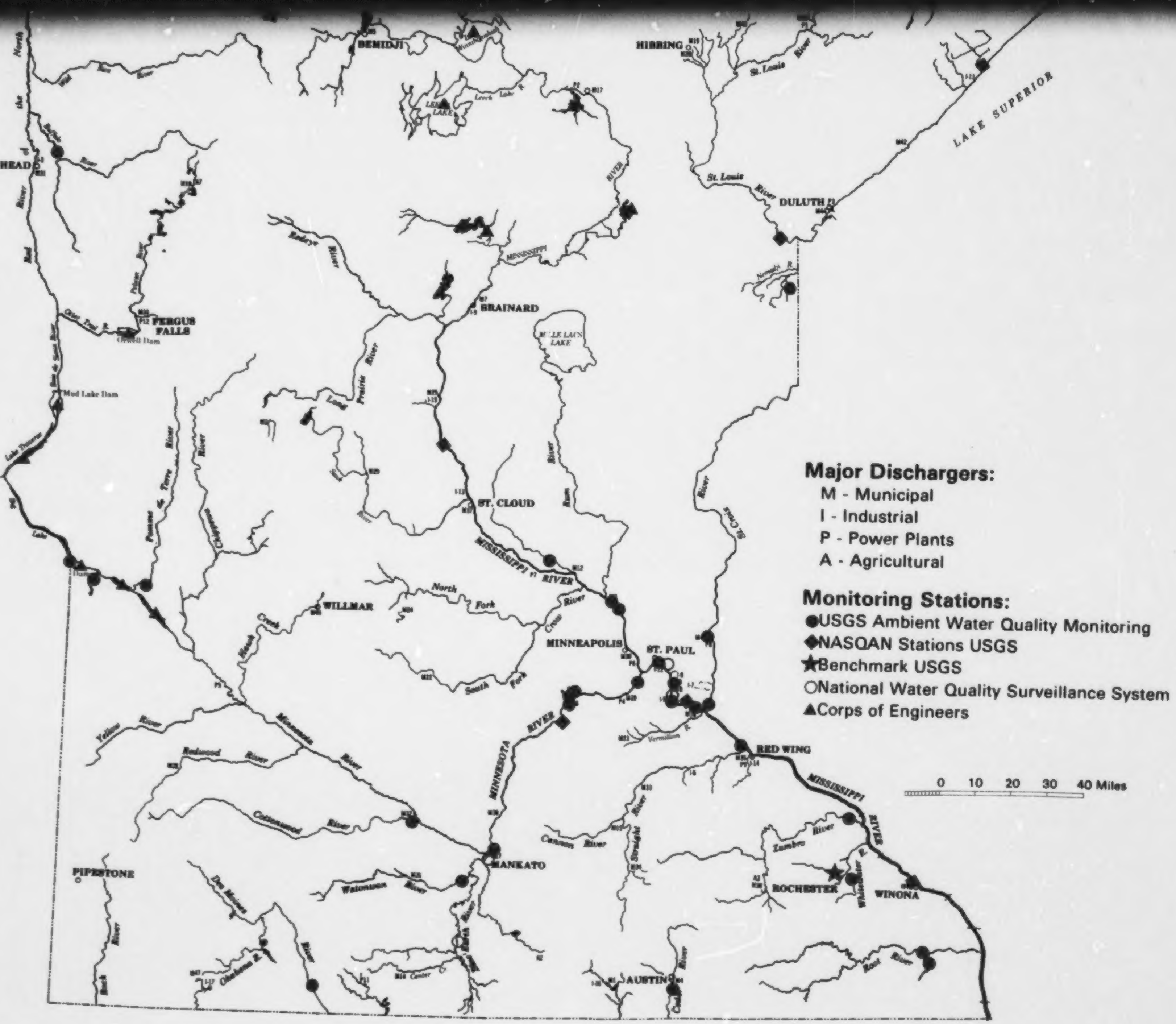
MINNESOTA

Figure 14: USGS Monitoring Networks, National Water Quality Surveillance System and Corps of Engineers Sampling Sites.


LAKE OF THE WOODS
Roseau
River
Rainy
River
INTERNATIONAL FALLS
Little Fork River
Vermilion River
Kawishiwi
THIEF RIVER FALLS
Thief R.
Red Lake River
UPPER RED LAKE
LOWER RED LAKE
Clearwater River
CROOKSTON
Red Lake
Red River of the North
HIBBING
St. Louis River
LAKE SUPERIOR
DULUTH
St. Louis River
BEMIDJI
Winnibigoshish
LEECH LAKE
Leech Lake R.
Wild Rice River
MOOREHEAD
Buffalo River
Red River
RIVER
MISSISSIPPI
Redeye River
Nemadji R.
Pelican River
Otter Tail R.
FERGUS FALLS
Orwell Dam
BRAINARD
MILLE LACS LAKE
Bois de Sioux River
Mud Lake Dam
Long Prairie River
Lake Traverse
Pomme de Terre River
River
Chippewa
Rum River
St. Croix River
ST. CLOUD
MISSISSIPPI RIVER
North Fork
River
WILLMAR

Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
A - Agricultural

Monitoring Stations:
● USGS Ambient Water Quality


Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
A - Agricultural
Monitoring Stations:
● USGS Ambient Water Quality Monitoring
◆ NASQAN Stations USGS
★ Benchmark USGS
○ National Water Quality Surveillance System
▲ Corps of Engineers
0 10 20 30 40 Miles
LAKE SUPERIOR
DULUTH
HIBBING
St. Louis River
BEMIDJI
LEECH LAKE
Leech Lake R.
MOOREHEAD
FERGUS FALLS
Otter Tail R.
Mud Lake Dam
Lake Traverse
BRAINARD
MILLE LACS LAKE
MISSISSIPPI RIVER
Redeye River
Long Prairie River
ST. CLOUD
Rum River
St. Croix River
WILLMAR
North Fork
South Fork
Crow River
MINNEAPOLIS
ST. PAUL
Vermillion R.
RED WING
Minnesota River
MINNESOTA RIVER
Chippewa River
Pomme de Terre River
Yellow Medicine River
Redwood River
Cottonwood River
MANKATO
Watonwan River
Blue Earth River
Des Moines River
PIPESTONE
Rock River
Cannon River
Straight River
AUSTIN
Cedar River
Zumbro River
ROCHESTER
Whitewater R.
WINONA
Root River
Lac qui Parle
Hawk Creek

Bid Sandy Lake - 5 stations
Cross Lake - 5 stations
Gull Lake - 4 stations
Big Stone Lake - 4 stations
Lac Qui Parle - 6 stations
Leech lake - 6 stations
Marsh Lake - 5 stations
Mud Lake - 4 stations
Orwell Lake - 5 stations
Pokegama Lake - 5 stations
Red Lake - 5 stations
Traverse Lake - 4 stations
Winnebigoshish Lake - 5 stations

The parameter coverage and frequency of sampling for these stations do not meet the minimum requirements of the Basic Monitoring Program; however, samples are collected for special purposes at these locations, chiefly, to determine the quality of water entering and leaving the impoundments.

(3) Major Dischargers - Fixed Station Networks

A review of Figures 13 and 14, showing the locations of major dischargers together with the locations of the monitoring stations, indicates that 31 major dischargers are not being monitored by any network station within a distance of 15 miles. Although there are no criteria relating dischargers to downstream monitoring the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed below. A complete listing of all major dischargers in the State of Minnesota is presented in the Attachment.

TABLE 8
MAJOR DISCHARGERS NOT MONITORED - MINNESOTA

1. Casmir Chirpich, Wells (Agricultural Discharger)
2. Fairmont WWTP
3. Northern States Power, Sherburn Units 1&2
4. Worthington WWTP
5. Worthington Industrial, Worthington
6. Marshall WWTP
7. Owatonna WWTP
8. Faribault WWTP
9. Red Wing WWTP
10. S.B. Foot Tanning Co., Red Wing
11. Northern States Power, Red Wing
12. Lakesville-Farmington WWTP
13. Melrose WWTP
14. Litchfield WWTP
15. Hutchinson WWTP
16. Northern State Power Co., Granite Falls
17. Willmar WWTP
18. Alexandria San. Dist., Alexandria

TABLE 8 (Cont'd)
MAJOR DISCHARGERS NOT MONITORED - MINNESOTA

19. Detroit Lakes WWTP
20. Skylark Ranch, Detroit Lakes
21. Thief River Falls WWTP
22. River Valley Enterprises, Oklee
23. Nelson Quality Egg Farm, Bagley
24. Nelson Quality Eggs, Inc., Bagley
25. Weldon Nelson #1, Bagley
26. Weldon Nelson #2, Bagley
27. Hibbing North WWTP
28. Hibbing South WWTP
29. Virginia WWTP
30. Ely WWTP
31. Brookdale Farms Inc. Brooks

(4) Quality Assurance Program

The State of Minnesota has not collated a total quality assurance (QA) document with QA management responsibility identified for the total monitoring effort. Therefore, data quality cannot be verified, based on those QA principles required by the Agency in a centrally managed QA program.

The State is committed to finalizing a QA program that will meet Agency requirements. Some progress was made in FY '80. QA Officers have been identified with QA responsibilities, that impact data quality. The QA management structure is very strong and is in a position to operate the program in an effective manner. Field sampling documentation is 100% complete. Laboratory methodology documentation is the largest task to be completed. It is anticipated this task will be completed no later than the end of the third quarter of FY '81.

(5) Intensive Survey Program

Eleven surveys were completed in the following stream segments during FY 1979:

Intensive surveys involving model development:

Blue Earth River at Winnebago and Blue Earth

Otter Tail River at Perham

Intensive surveys conducted throughout the State downstream of selected dischargers:

North Fork Crow River at Cokato

Long Prairie River

Sauk River at Melrose

County Ditch 40A at Lafayette

Sucker Creek at Arlington

Straight River at Owatonna

South Fork of Crow River at Hutchington

Chippewa River at Benson

The following abstracts were received:

Assessment of County ditch 40A
and Judicial Ditch 1A Downstream of Lafayette

Assessment of the North Fork of the Crow
River from Cokato to Delano

Assessment of a Water Basin and the Otter
Tail River Downstream of Perham, Minnesota

The abstracts show that the surveys were conducted in accordance with the requirements of the Basic Water Monitoring Program.

(6) Effluent Monitoring Program

Minnesota has 47 municipal, 9 agricultural and 29 non-municipal major dischargers. Inspections planned and completed during FY 79 were as follows.

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	55	
Municipal		32
Non-Municipal		12
Agricultural	0	1
Compliance Evaluation Inspections (CEI)	30	
Municipal		2
Non-Municipal		37
Agricultural	0	3

	Projected	Accomplished
Toxics	0	
Municipal		0
Non-Municipal		0

Commitments were made to complete a compliance sampling inspection (CSI) or a compliance evaluation inspection (CEI) at all major dischargers during FY 1979. The State did not meet their commitment for CSIs, completing only 44 out of a commitment to do 55. The State exceeded their commitment for CEIs, completing 39 against a commitment of 30.

It should be noted that the results of compliance monitoring for FY 79 reveals 87% municipal and 89% of non-municipal major dischargers were in compliance with their permits.

The State did not commit to do any agricultural surveys, but did conduct one CSI and 3 CEIs at major agricultural dischargers. No commitments were made to complete CEIs or CSIs at any toxics or minor dischargers.

The commitment and accomplishments for inspections is adequate. Their performance in submitting the required NPDES compliance forms after each inspection is satisfactory. The follow-up enforcement action upon receiving deficiency letters is considered good.

(7) Proposed Biological Monitoring Program

The State of Minnesota collected fish and macroinvertebrates from all 19 core stations in 1979. The fish samples were not analysed for the various organic and inorganic pollutants. It will be early 1981 before any data are available. The macroinvertebrate analyses were completed and were of acceptable quality. Plankton and periphyton sampling were not included in their biological program.

Indications are that the biological monitoring program will be greatly reduced during FY 1980 becuase of local interest in potential acid rain problems and other commitments.

(8) Data Interpretation and Reporting

Ambient Data

The State of Minnesota submitted their ambient water quality data for storage into the STORET system. The data were submitted quarterly.

Effluent Data

Upon completion of an inspection, the State submitted a report of each sampling and evaluation inspection of a major discharger to the Enforcement Division.

Intensive Survey Data

Abstracts were submitted for a total of 11 surveys performed during FY 1979.

Section 305(b) Report

Utilizing the Section 305(b) reporting process, the State completed and submitted biennially to the U.S.EPA a report describing the status of the waters of the State. The latest report submitted was for the year 1980.

MINNESOTA

September 1979

FY 1980 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	Name	Location	Permit No.	Expiration Date
1.	Albert Lea	Albert Lea	MN 0030155	4/30/82
2.	Alexandria Sanitary Dist.	Alexandria	MN 0040738	12/31/79
3.	Anoka (MWCC)	Anoka	MN 0029921	3/31/82
4.	Austin	Austin	MN 0022683	3/31/82
5.	Bemidji	Bemidji	MN 0022462	9/30/82
6.	Blue Lake (MWCC)	Blue Lake	MN 0029882	3/31/82
7.	Brainerd	Brainerd	MN 0047481	9/30/80
8.	Cottage Grove (MWCC)	Cottage Grove	MN 0029904	3/31/82
9.	Crookston	Crookston	MN 0021423	9/30/81
10.	Detroit Lakes	Detroit Lakes	MN 0020192	6/30/82
11.	East Grand Forks	East Grand Forks	MN 0021814	3/31/82
12.	Elk River	Elk River	MN 0020788	12/31/80
13.	Ely	Ely	MN 0020508	5/31/82
14.	Fairmont	Fairmont	MN 0030112	5/31/83
15.	Faribault	Faribault	MN 0030121	3/31/84
16.	Fergus Falls	Fergus Falls	MN 0029807	12/31/81
17.	Grand Rapids	Grand Rapids	MN 0022080	6/30/83
18.	Hastings (MWCC)	Hastings	MN 0029955	3/31/83
19.	Hibbing - North	Hibbing	MN 0030627	3/31/81
20.	Hibbing - South	Hibbing	MN 0030643	3/31/81
21	Hoyt Lakes	Hoyt Lakes	MN 0020206	6/30/81
22.	Hutchinson	Hutchinson	MN 0020265	3/31/84
23	Lakeville-Farmington	Empire Township	MN 0045845	9/30/80
24.	Litchfield	Litchfield	MN 0023973	6/30/82
25.	Little Falls	Little Falls	MN 0020761	3/31/82
26.	Madelia	Madelia	MN 0024040	9/30/83
27.	Mankato	Mankato	MN 0030171	3/31/84
28.	Marshall	Marshall	MN 0022179	9/30/83
29.	Melrose	Melrose	MN 0020290	6/30/80
30.	Metro Plant (MWCC)	Minneapolis St. Paul	MN 0029815	6/30/82
31.	Moorhead	Moorhead	MN 0024236	12/31/81
32.	New Ulm	New Ulm	MN 0030066	12/31/83
33.	Northfield	Northfield	MN 0024368	3/31/84
34.	Owatonna	Owatonna	MN 0024457	3/31/82
35.	Red Wing	Red Wing	MN 0024571	3/31/84
36.	Rochester	Rochester	MN 0024619	12/31/83
37.	St. Cloud	St. Cloud	MN 0040878	5/31/82
38.	St. Peter	St. Peter	MN 0022535	6/30/80
39.	Seneca (MWCC)	Seneca	MN 0030007	3/31/82
40.	Stillwater	Stillwater	MN 0029998	12/31/83
41.	Thief River Falls	Thief River Falls	MN 0021431	9/30/83
42.	Two Harbors	Two Harbors	MN 0022250	3/31/82
43.	Virginia	Virginia	MN 0030163	3/31/84
44.	Western Lake Superior San. Dist. (WLSSD)	Duluth	MN 0049786	6/30/83
45.	Willmar	Willmar	MN 0025259	8/31/83
46.	Winona	Winona	MN 0030147	3/31/84
47.	Worthington	Worthington	MN 0031186	3/31/82

ATTACHMENT 1

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MINNESOTA

FY 1980 LIST OF MAJOR DISCHARGERS

September 1979

INDUSTRIAL

	Name	Location	Permit No.	Expiration Date
1.	American Crystal Sugar Co.	Crookston	MN 0001929	10/31/83
2.	American Crystal Sugar Co.	E. Grand Forks	MN 0001937	10/31/83
3.	American Crystal Sugar Co.	Moorhead	MI 0001945	10/31/83
4.	Boise Cascade Corp.	Int'l Falls	MN 0001643	3/31/81
5.	Koch Refinery	Pine Bend	MN 0000418	6/30/80
6.	Minnesota Malting	Cannon Falls	MN 0001481	6/30/82
7.	Minnesota Mining & Mfg. Co.- Chemolite	Cottage Grove	MN 0001449	12/31/81
8.	Northwestern Refining Co.	St. Paul Park	MN 0000256	6/30/80
9.	Potlatch, Inc.	Brainerd	MN 0001422	6/30/80
10.	Reserve Mining Co. (Peter Mitchel Mine)	Babbitt	MN 0046981	*
11.	Reserve Mining Co.	Silver Bay	MN 0001198	(Covered by Court Ord
12.	St. Paul Ammonia Products, Inc.	So. St. Paul	MN 0000329	6/30/80
13.	St. Regis Paper Co.	Sartell	MN 0000973	6/30/82
14.	S.B. Foot Tanning Co.	Red Wing	MN 0038962	6/30/81
15.	Wausau Paper Mills (Hennepin Paper Co.)	Little Falls	MN 0000302	12/31/80
16.	Wilson & Co.	Albert Lea	MN 0000124	11/30/83
17.	Worthington Industrial	Worthington	MN 0031178	3/31/83

POWER PLANTS

1	Minnesota Power & Light Co.	Aurora	MN 0000990	*
2.	Minnesota Power & Light Co.	Cohasset	MN 0001007	9/30/80
3.	Minnesota Power & Light Co.	Duluth	MN 0001015	6/30/84
4.	Northern States Power	Burnsville	MN 0000876	3/31/80
5.	Northern States Power	Granite Falls	MN 0000906	4/30/81
6.	Northern States Power	Minneapolis	MN 0000892	6/30/82
7.	Northern States Power	Monticello	MN 0000868	6/30/82
8.	Northern States Power	Oak Park Heights	MN 0000825	5/31/81
9.	Northern States Power	Red Wing	MN 0004006	*
10.	Northern States Power	St. Paul	MN 0000884	6/30/81
11.	Northern States Power	Sherburn Units 1 & 2	MN 0002186	8/31/80
12.	Ottertail Power	Fergus Falls	MN 0002011	12/31/80

* Dates will be determined following reissuance

September 1979

MINNESOTA

FY 1980 LIST OF MAJOR DISCHARGERS

AGRICULTURAL

	Name	Location	Permit No.	Expiration Date
1.	Brookdale Farms, Inc.	Brooks	MN 0045870	12/31/79
2.	Casmir Chirpich	Wells	MN 0045853	12/31/79
3.	International Swine, Inc.	Rochester	MN 0047473	12/31/79
4.	Nelson Quality Egg Farm	Bagley	MN 0045675	*
5.	Nelson Quality Eggs, Inc.	Bagley	MN 0031682	*
6.	River Valley Enterprises	Oaklee	MN 0044075	10/31/79
7.	Skylark Ranch	Detroit Lake	MN 0043150	10/31/79
8.	Weldon Nelson #1	Bagley	MN 0039764	*
9.	Weldon Nelson #2	Bagley	MN 0039772	*

* Dates will be determined following reissuance

e. OHIO

(1) Overview

In the State of Ohio, there are three agencies involved in ambient monitoring. They are the Ohio Environmental Protection Agency (OEPA) the U.S. Geological Survey (USGS) and the Department of Agriculture (DA). Extensive monitoring is conducted throughout the State, primarily by OEPA and USGS. There is no duplication in these networks when sampling parameters and frequency are considered. However, when compared to the Basic Water Monitoring Program, the overall program within the State has minor deficiencies in regards to ambient and effluent monitoring, quality assurance and data reporting. The intensive survey program cannot be evaluated because abstracts were not submitted. The intensive survey program and the other parts of the State monitoring program are discussed in greater detail below. The ambient monitoring conducted by the other agencies is also discussed.

(2) Assessment of the State Monitoring Program

(a) National Ambient Monitoring Network

Ohio EPA has identified 39 National Ambient Monitoring Stations which comprise the core network. As described in Figure 15, these stations provide a broad coverage of the State waters and are operated as prescribed in the basic program except that parameter sampling and analysis does not include toxic parameters. The station locations are adequate for the purpose of providing trend data; however, the adequacy of the network to assess pollution control programs is questionable. As shown in Figure 15, the impact of a large number of major dischargers would not be assessed if only the core network was operational. The locations of the core stations are described in Table 9.

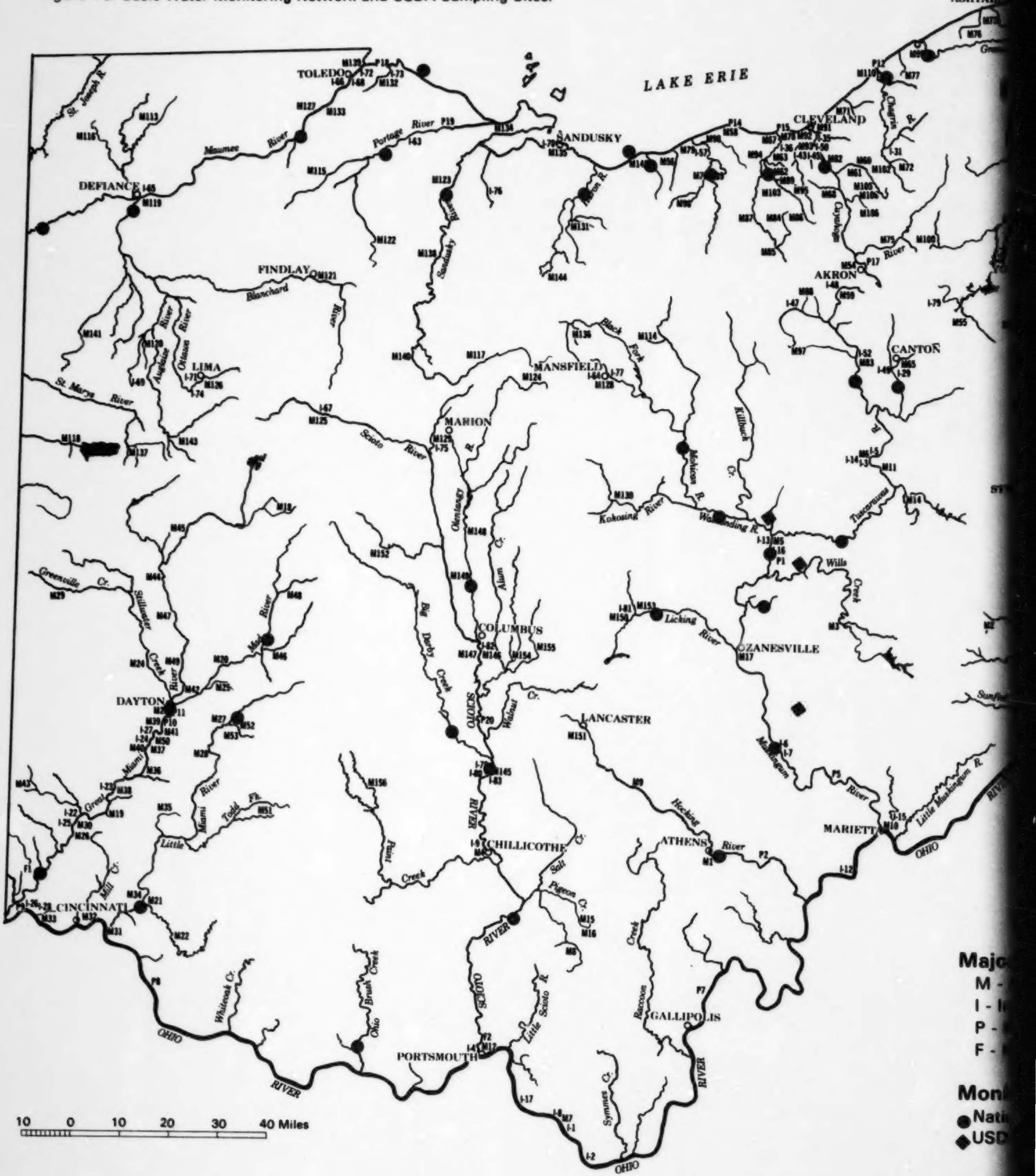
TABLE 9
NATIONAL AMBIENT MONITORING STATIONS - OHIO

Station Location	Station No.
Oregon Water Intake, Lake Erie	504240
Mentor Water Intake, Lake Erie	504130
Maumee River at Waterville, Ohio	500080
Maumee at Antwerp	500140
Auglaize above Defiance	500290
Portage River at Woodville	500510
Sandusky River above Fremont	500820
Huron below Milan	501050
Vermilion at Vermilion	501260
Black River at Elyria	501520
Rocky near Berea	501800
Cuyahoga River at Independence	502020
Chagrin at Willoughby	502400

10a

OHIO

Figure 15: **Basic Water Monitoring Network and USDA Sampling Sites.**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CINCINNATI
PORTSMOUTH
GALLIPOLIS
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Blanchard River
Auglaize River
Ottawa River
St. Marys River
Sandusky River
Huron R.
Black Fork
Cuyahoga
Chagrin R.
Scioto River
Olentangy R.
Alum Cr.
Big Darby Creek
Walnut Cr.
Kokosing River
Walhonding R.
Mohican R.
Killbuck Cr.
Tuscarawas
Wills Creek
Licking River
Muskingum River
Little Muskingum R.
Hocking River
Greenville Cr.
Stillwater Creek
Mad River
Great Miami River
Little Miami River
Todd Fk.
Mill Cr.
Paint Creek
Salt Cr.
Pigeon Cr.
Whiteoak Cr.
Ohio Brush Creek
Little Scioto R.
Raccoon Creek
Symmes Cr.
OHIO RIVER
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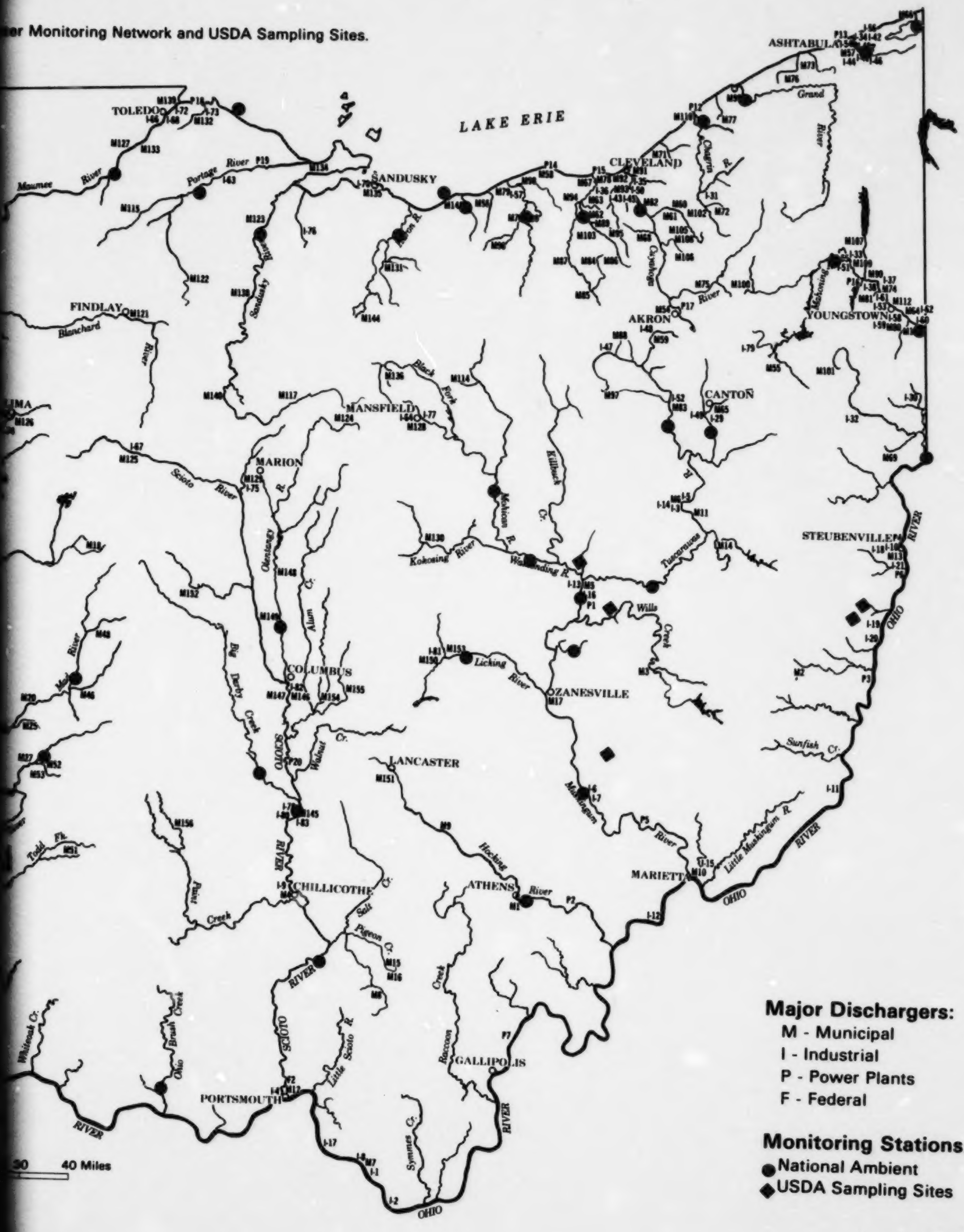
er Monitoring Network and USDA Sampling Sites.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Huron R.
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Killbuck Cr.
Kokosing River
Walhonding R.
Tuscarawas
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Alum Cr.
Big Darby Creek
Walnut Cr.
Hocking River
Sunfish Cr.
Little Muskingum R.
Mad River
Todd Fk.
Paint Creek
Salt Cr.
Pigeon Cr.
Raccoon Creek
Symmes Cr.
Little Scioto R.
Ohio Brush Creek
Whiteoak Cr.
OHIO RIVER
SCIOTO RIVER
30 40 Miles
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● National Ambient
◆ USDA Sampling Sites

TABLE 9 (CONT'D)
NATIONAL AMBIENT MONITORING STATION - OHIO

Station Location	Station No.
Grand near Painesville	502530
Ashtabula near Ashtabula	502760
Conneaut at Conneaut	502870
Great Miami River at Dayton	600310
Great Miami at New Baltimore	600030
Mad at St. Paris Pike at Eagle City	610040
Little Miami River at Oldtown	
Little Miami River at Milford	600520
Ohio Brush near West Union	600660
Scioto River near Circleville	601340
Scioto River at Highy	600770
Olentangy River near Worthington	601290
Big Darly Creek at Darbyville	601300
Racoon at Adamsville	601400
Hocking River at Athens	601650
Muskingum River near Coshocton	611740
Muskingum at McConnelsville	601860
Tuscarawas River below Massillon	601930
Tuscarawas at Newcomertown	611790
Nimishillen Creek at North Industry	601940
Walhonding at Nellie	601910
Mohican River at Greer	601870
Licking River below Newark	601770
Mahoning River at Leavittsburg	602280
Mahoning River at Lowellville	602300
Little Beaver near E. Liverpool	602000

A STORET retrieval of 9 stations was made to determine if all parameters prescribed in the basic program were being analyzed. In addition to the toxic parameters for fish tissue, water and sediment, nitrate and nitrite are not being analyzed. Description forms have been submitted for each core station. It should be noted that 9 of these core stations are NASQANs, operated by USGS.

(b) State Monitoring Network

In addition to the national network, the State has established a series of stations to supplement national needs and to satisfy state and local needs in Ohio. These are displayed in Figure 16.

The State network is broken into three parts, with many of the stations located at exisiting stations, or dual stations.

- The Ohio EPA has established 33 stations to supplement the National Ambient Network, sampled on a monthly basis.

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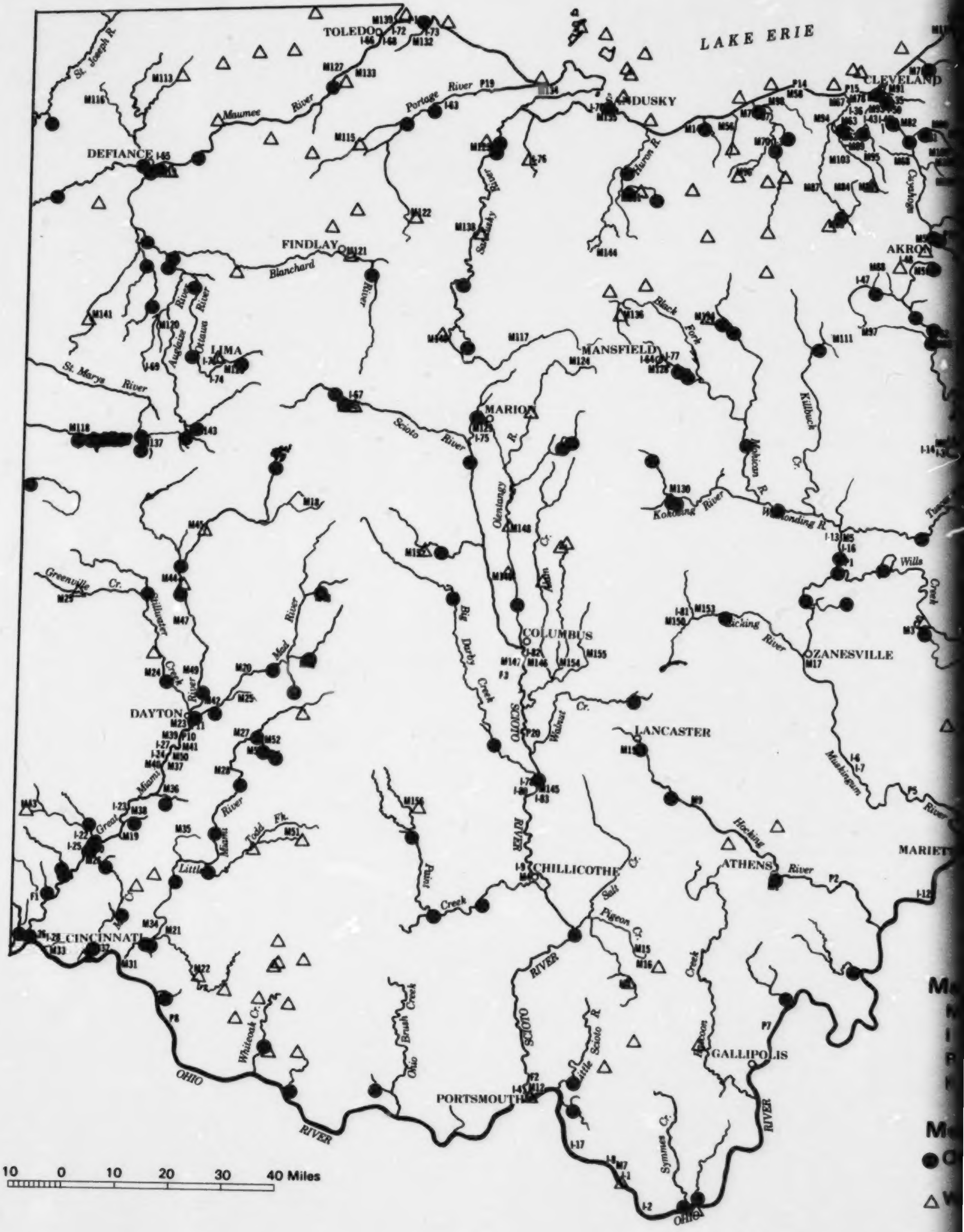
OHIO

Figure 16: State Monitoring Network and Water Intakes.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CHILLICOTHE
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CINCINNATI
GALLIPOLIS
PORTSMOUTH
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Sandusky River
Huron R.
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Auglaize River
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Black Fork
Kokosing River
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Mohican R.
Killbuck Cr.
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Olentangy R.
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Walnut Cr.
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Muskingum River
Hocking River
Greenville Cr.
Stillwater Creek
Mad River
Great Miami River
Little Miami River
Todd Fk.
Whiteoak Cr.
Ohio Brush Creek
Paint Creek
Salt Creek
Pigeon Cr.
Little Scioto R.
Symmes Cr.
Raccoon Creek
OHIO RIVER
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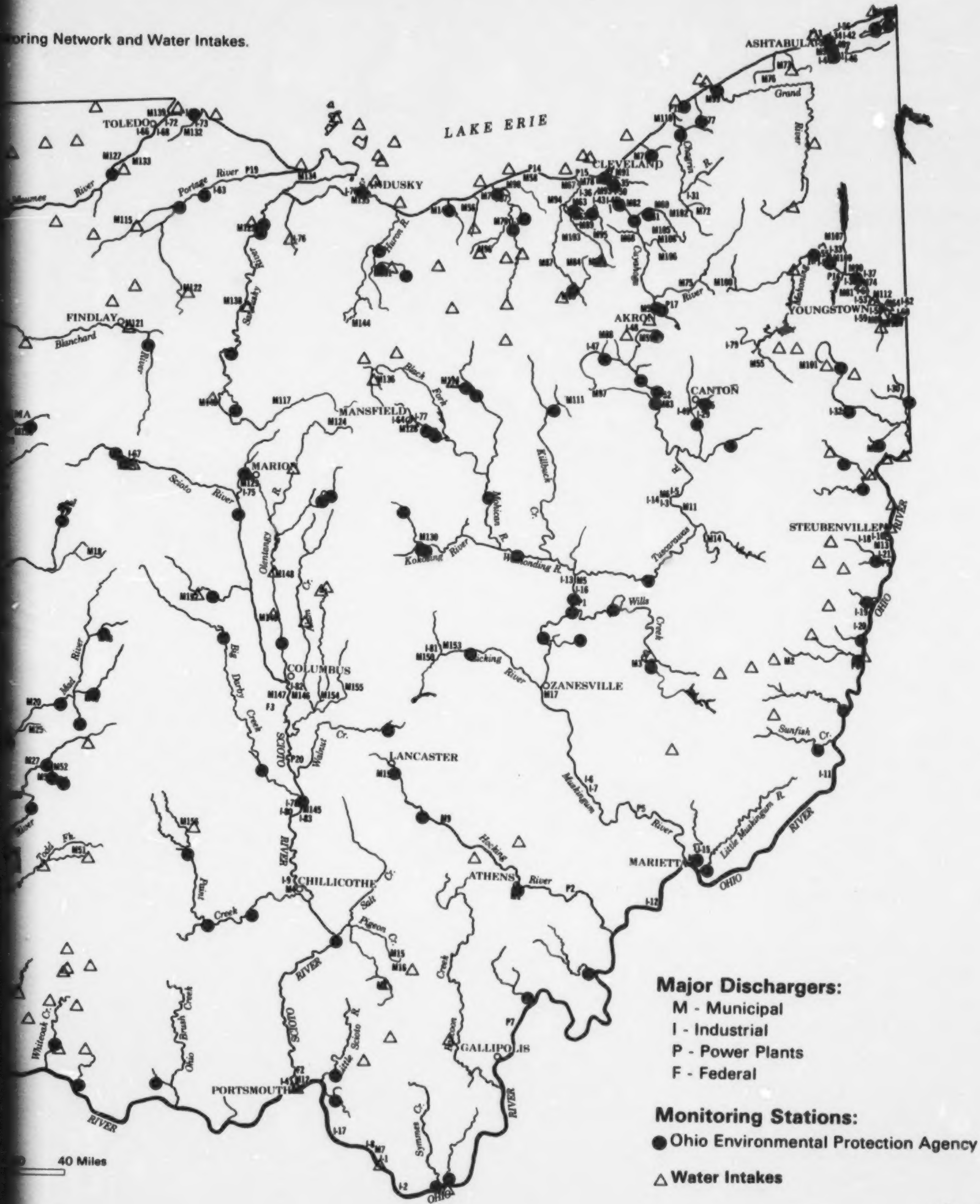
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Salt Cr.
Pigeon Cr.
Brush Creek
Ohio Brush Creek
Whiteoak Cr.
Little Scioto R.
Symmes Cr.
Raccoon Creek
OHIO RIVER
40 Miles
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● Ohio Environmental Protection Agency
△ Water Intakes

- The State has also established 42 stations for quarterly sampling. These stations are sampled 4 times a year during seasonal changes.
- During periods of low-flow, a network consisting of 54 stations will be established to sample one or more times per year during low-flow periods to determine water quality at its most critical point.

Parameter coverage for these stations is presented in Attachment 1. All parameters required for the Basic Water Monitoring Program are analyzed except for representative fish tissue samples. Also, a large number of additional parameters are analyzed. ORSANCO monitoring stations along the Ohio River are supported in part by the State. An evaluation of this effort is not included in this report.

(c) USGS Network

The USGS operates 26 ambient water quality monitoring stations in the State of Ohio. These are separate from the stations operated by Ohio EPA. There are 39 Ambient Monitoring Stations in the Ohio basic network. Of these 39 stations, 9 are NASQAN sampling sites maintained by the USGS. One Benchmark sampling site is also maintained by the USGS. Although the NASQAN sites are sampled monthly, at certain stations parameters are analyzed at quarterly intervals. The USGS stations are displayed in Figure 17.

The NASQAN samples are analyzed for all of the parameters required for the Basic Water Monitoring Program, except for representative fish tissue analyses and flow. However, the samples are analyzed for most of the trace organics required for fish tissue and sediments and other parameters, including heavy metals.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

(d) Department of Agriculture

The U.S. Department of Agriculture maintains an Ambient Water Monitoring network to meet the research needs of their Coshocton, Ohio research station. The data collected from the network represents agricultural and stripmine watershed samples from 5 areas located in 3 counties within the state. These watersheds are sampled on a storm event basis and are analyzed for all of the parameters required for the Basic Water Monitoring Network except fecal coliform, total kjeldahl nitrogen, nitrite, chemical oxygen demand and representative fish tissue analyses. Additional parameters analyzed at each station include heavy metals, acidity, alkalinity, ammonia, bicarbonate, carbon dioxide, chloride, color, cyanide, fluoride, hardness, hydrogen sulfide, phenols, sulfate, and dissolved solids. Springs at these sites are sampled weekly. The network, displayed in Figure 15, solely supports the research needs of the Department of Agriculture, with no connection between Federal (EPA) or State networks.

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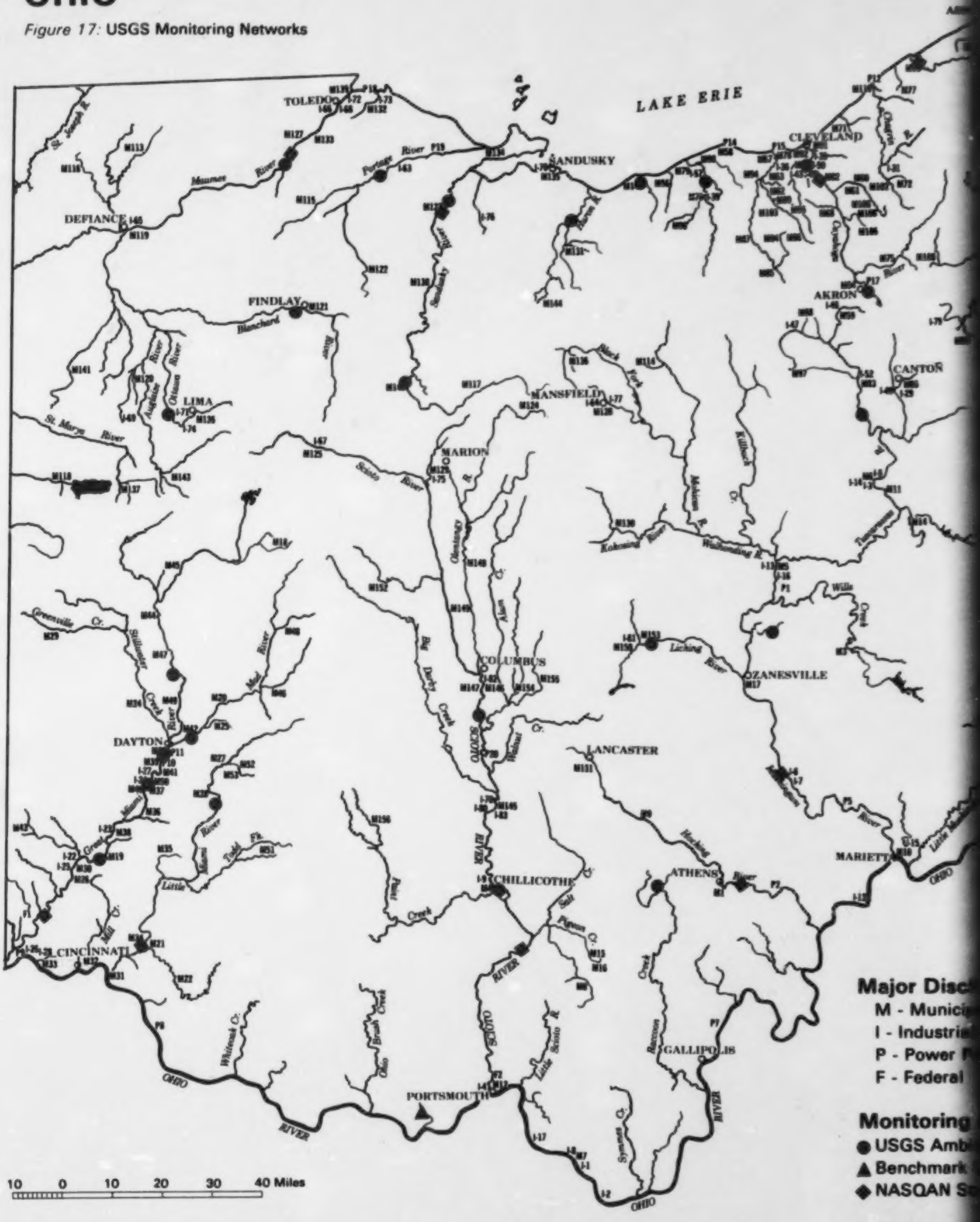
OHIO

Figure 17: USGS Monitoring Networks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ZANESVILLE
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MARIETTA
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Mill Cr.
Paint Creek
Salt Cr.
Pigeon Cr.
Hocking River
Raccoon Creek
Symmes Cr.
Little Scioto R.
Ohio Brush Creek
Whiteoak Cr.
Scioto River
Ohio River
Little Muskingum
10 0 10 20 30 40 Miles
Major Disc
M - Munici
I - Industri
P - Power
F - Federal
Monitoring
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▲ Benchmark
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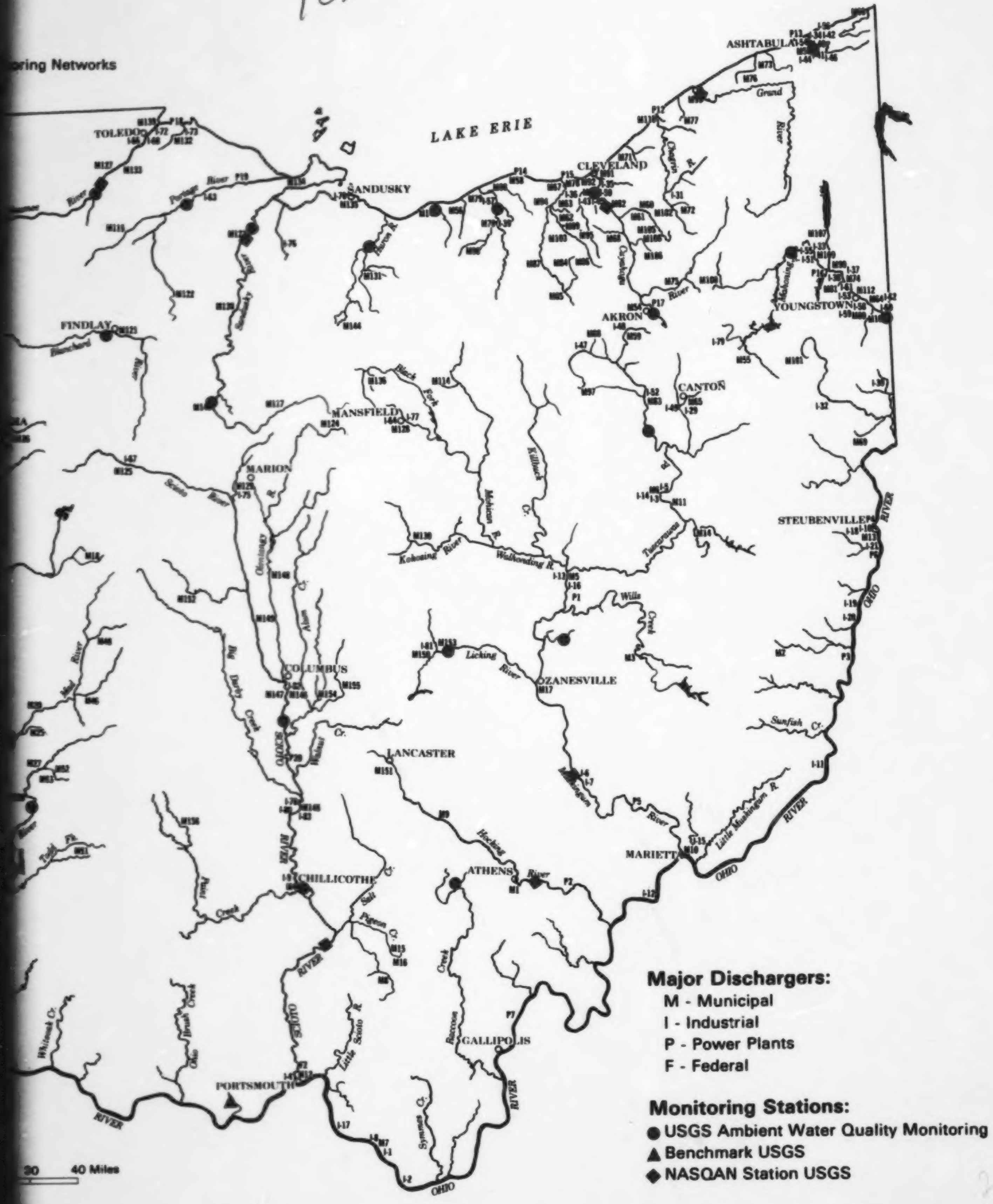

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Walnut Cr.
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Whiteoak Cr.
Mad River
Todd Fk.
Blanchard
Sandusky
Huron R.
Black Fork
Portage River
OHIO RIVER
30
40 Miles
Major Dischargers:
M - Municipal
I - Industrial
P - Power Plants
F - Federal
Monitoring Stations:
● USGS Ambient Water Quality Monitoring
▲ Benchmark USGS
◆ NASQAN Station USGS

2

(3) Major Dischargers - Fixed Station Network

A review of Figures 15 thru 17, showing the locations of major dischargers together with the locations of the monitoring stations, indicates that 31 major dischargers are not being monitored by any network station within a distance of 15 miles. Although there are no criteria relating dischargers to downstream monitoring, the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed in Table 10 below. A complete listing of all major dischargers in the State of Ohio is presented in Attachment 2. Certain of the dischargers to the Ohio River may have ORSANCO stations within 15 miles.

TABLE 10
MAJOR DISCHARGERS NOT MONITORED - OHIO

DISCHARGERS

1. Archbold WWTP
2. Bryan WWTP
3. Van Wert WWTP
4. Ohio Decorative Products, Spencerville
5. Fostoria WWTP
6. Willard WWTP
7. Bowling Green WWTP
8. Bellefontaine WWTP
9. Greenville WWTP
10. Oxford WWTP
11. Clermont County Amelia-Batavia Regional S.D., Gatavia
12. U.S. Dept. of Energy-Portsmouth Gaseous Diffusion Plant
13. Empire Detroit Steel, Portsmouth
14. Portsmouth WWTP
15. Orrville WWTP
16. Union Camp Corp., Dover
17. Dover Chemical Corp., Dover
18. Empire Detroit Steel, Dover
19. Dover WWTP
20. New Philadelphia WWTP
21. Uhrichsville-Dennison WWTP, Uhrichville
22. Alliance WWTP
23. Chase Bag Co.
24. Geauge County- McFarland S.D., Bainbridge Twp.
25. Tiffin WWTP
26. Willard WWTP
27. Galion WWTP
28. Zanesville WWTP
29. Jackson WWTP
30. Wellston North WWTP
31. Wellston South WWTP

(4) Intensive Survey Program

Field survey work was planned and completed on the following stream segments during FY 1979:

Mill creek from Marysville to Scioto River

On Scioto River-75 mile segment from Dublin to Chillicothe

On Hocking-23 mile segment from Lancaster to Logan.

Mimishillen Creek-90 miles includes Hurford run-fohl ditch and Sherrich run.

Luscarawas River-35 mile segment from Massillon to Dover.

Abstracts were submitted for surveys completed. According to the state, technical reports are prepared for each intensive survey. Chemical/physical data are entered into STORET and are included as part of their 305b report.

(5) Effluent Monitoring Program

In the State of Ohio, there are 262 major dischargers; 156 municipal, 103 non-municipal and 3 federal. Inspections planned and completed during FY 1979 were as follows:

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	68	
Municipal		36
Non-Municipal		50
Federal		0
Compliance Evaluation Inspections (CEI)	177	
Municipal		107
Non-Municipal		57
Federal	0	0
Toxics	0	
Municipal		0
Non-Municipal		0

Commitments were not made to complete either a CSI or CEI at all major dischargers during FY 1979. However, the State did commit to 68 CSI and 177 CEIs, a total of 245 inspections against 262 required. Ohio exceeded their commitment for CSI surveys, completing 86 against 68 committed. They did not meet their commitment for CEI surveys, completing 164 against a commitment of 177.

It should be noted that the results of compliance monitoring (State and Federal) for FY 79 reveals 75 percent of municipal and 65 percent of non-municipal major dischargers were in compliance with their permits.

The State's accomplishments for inspections is adequate. Their performance in submitting the required NPDES compliance forms after each inspection is satisfactory. The follow-up enforcement action upon receiving deficiency letters is considered good.

Commitments were not made for federal inspections nor toxic inspections. No commitments were made for CEIs or CSIs at any minor dischargers.

(6) Proposed Biological Monitoring Program

The State of Ohio completed part of the work described in the Proposed Biological Monitoring Program in 1979. Macroinvertebrate and periphyton were collected at 20 of the 39 designated stations. No fish samples were collected for priority pollutant analyses, nor were phytoplankton collected. It is projected that the 1980 biological program will be similar to 1979. The work that was accomplished is of acceptable quality.

(7) Quality Assurance Program

The State of Ohio has just completed collating a total quality assurance (QA) document with QA management responsibility identified for the total monitoring effort, and forwarded to the Region for review/approval. The review, when concluded, should find this document acceptable. An earlier draft has been reviewed by the Region and recommendations made to the State to correct deficiencies. This document should address these deficiencies.

The State is in the process of filling the position of QA Coordinator. This individual will be responsible for managing the QA program. As soon as the State brings this person on board the Regional Administrator will be in a position to approve the State's QA program. This program upon implementation, will verify data quality based upon those QA principles required by the Agency in a centrally managed QA program.

(8) Data Interperation & Reporting

Using the Section 305(b) reporting process, the State of Ohio has submitted biennially a report to the USEPA describing the quality of their waters. The latest report submitted was for the year 1980.

Ambient Data

Except for fish tissue data, the State of Ohio submitted the majority of their ambient water quality data for storage into the STORET system.

However, retrievals for the CY 1979 Environmental Profile clearly shows that the State is not storing data at all stations. It also shows data stored does not meet the sampling frequency rate of the Basic Water Monitoring Program.

Effluent Data

Upon completion of an inspection, the State submitted a report of each compliance sampling and compliance evaluation inspection of a major permitter to the Enforcement Division.

Intensive Survey Data

Abstracts were not submitted for FY 1979.

STATE AMBIENT NETWORK
ANALYTICAL PARAMETERS

PARAMETER	ABBREVIATION	M	Q	LF	ST
Acidity, Total, $CaCO_3$	Acid $CaCO_3$-T				X
Alkalinity, Total, $CaCO_3$	Alkaline $CaCO_3$-T				
Aluminum, Total, Al	Al-T				X
Arsenic, Total As	As-T				X
BOD 5 day	BOD-5				X
Cadmium, Total, Cd	Cd-T	4	4		X
Carbon, Total Org., C	C-T-Org				X
Chloride, Cl	Cl				X
Chlorine, Total Residual	Cl_2-T-R				X
Chromium, Hex, Cr	Cr-Hex				X
Chromium, Total Cr	Cr-T	4	4	1	X
COD	COD	12	4	1	
Conductivity (field)	Micromho (field)	12	4	1	
Copper, Total, Cu	Cu-T	4	4	1	X
Cyanide, Total, CN	CN-T				X
Dissolved Oxygen (field)	D.O. (field)	12	4	1	
Fecal Coli, Total, MF	Fecal Coli-T-MF	12	4	1	
Flow (USGS)	Flow (USGS)	12	4	1	
Fluoride, Diss., F	F-Diss				X
Hardness, Total $CaCO_3$	Hard $CaCO_3$-T	4	4	1	X
Iron, Total, Fe	Fe-T	4	4	1	X
Lead, Total, Pb	Pb-T	4	4	1	X
Manganese, Total, Mn	Mn-T				X
MBAS	MBAS				X

STATE AMBIENT NETWORK ANALYTICAL PARAMETERS

PARAMETER	ABBREVIATION	M	Q	LF	ST
Mercury, Total, Hg	Hg-T	4	4	1	X
Nickel, Total, Ni	Ni-T	4	4	1	
Nitrate, NO_3 as N	NO_3-N-T	12	4	1	
Nitrite, NO_2 as N	NO_2-N-T	12	4	1	
Nitrogen, Ammonia, N	NH_3-N-T	12	4	1	
Oil-Grease, Total	O+G-T	12	4	1	
Organic Scan	OS				X
pH (field)	pH (field)	12	4	1	
Phenolics	Phenolics	4	4	1	X
Phosphorus, Dissolved, P	P-Diss				X
Phosphorus, Total, P	P-T	12	4	1	
Polychlorinated Biphenyls	PCB				X
Residue, Total Flt. (Diss)	TDS				X
Residue, Total Nflt. (Susp)	TSS	12	4	1	X
Silica, Total (Diss)	Si-T-Diss				X
Sulfate, SO_4	SO_4-T				X
Total Kjeldahl Nitrogen	Kjel-T-N	12	4	1	
Water Temperature (field)	Temp (field)	12	4	1	
Zinc, Total, Zn	Zn-T	4	4	1	X

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a. Station Type and Sampling Frequency: Monthly (M); Quarterly (Q); Low Flow (L); Special Tests (ST)

September 1979

OHIO

FY 1980 LIST OF MAJOR DISCHARGERS

MUNICIPAL

Name	Location	Permit No.	Expiration Date
Southeast District			
1. Athens	Athens	OH 0023931	5/31/82
2. Belmont County S.A. #1	Belmont County	OH 0049999	5/31/82
3. Cambridge	Cambridge	OH 0024309	9/21/80
4. Chillicothe Easterly	Chillicothe	OH 0024406	9/19/80
5. Coshocton	Coshocton	OH 0024775	9/18/80
6. Dover	Dover	OH 0024945	4/30/82
7. Ironton	Ironton	OH 0025852	5/31/82
8. Jackson	Jackson	OH 0020834	7/01/82
9 Logan	Logan	OH 0023388	*
10. Marietta	Marietta	OH 0026344	2/28/82
11. New Philadelphia	New Philadelphia	OH 0026727	9/18/80
12. Portsmouth	Portsmouth	OH 0027197	3/31/82
13. Steubenville	Steubenville	OH 0027511	5/31/82
14. Uhrichsville-Dennison	Uhrichsville	OH 0020079	8/15/83
15. Wellston-North	Wellston	OH 0023507	*
16. Wellston-South	Wellston	OH 0059056	*
17. Zanesville	Zanesville	OH 0028240	6/30/82
Southwest District			
18. Bellefontaine	Bellefontaine	OH 0024066	4/30/82
19. Butler County Lesourdsville, S. D.	Liberty Township	OH 0049417	9/14/81
20. Clark County Southwest Regional	Medway	OH 0049794	3/31/82
21. Clermont County Lower East Fork Regional	Miami Township	OH 0049379	6/30/82
22. Clermont County Amelia-Batavia Regional	Batavia	OH 0049387	6/30/82
23. Dayton	Dayton	OH 0024881	9/27/80
24. Englewood	Englewood	OH 0025011	*
25. Fairborn	Fairborn	OH 0025062	9/29/80
26. Fairfield	Fairfield	OH 0025071	9/19/80
27. Greene County-Beaver Creek	Beaver Creek Twp	OH 0025381	9/21/80
28. Greene County-Sugar Creek	Sugar Creek Twp	OH 0040592	11/29/81
29. Greenville	Greenville	OH 0025429	9/20/80
30. Hamilton	Hamilton	OH 0025445	9/27/80
31. Hamilton County, M.S.D.-Little Miami	Cincinnati	OH 0025453	9/26/80
32. Hamilton County, M.S.D.-Mill Creek	Cincinnati	OH 0025461	9/26/80
33. Hamilton County, M.S.D.-Muddy Creek	Cincinnati	OH 0025470	6/30/82
34. Hamilton County, M.S.D.	Remington	OH 0025488	9/21/80
35. Lebanon	Lebanon	OH 0021059	*

* Dates will be determined following reissuance

September 1979

OHIO

MUNICIPAL (Cont.)

Name	Location	Permit No.	Expiration Date
36. MCD, Franklin Area	Franklin	OH 0025275	9/27/80
37. Miamisburg	Miamisburg	OH 0026492	9/27/80
38. Middletown	Middletown	OH 0026522	*
** 39. Montgomery County - Moraine S. D.	Moraine City	OH 0026611	9/27/82
40. Montgomery County - Western Regional	Miami Township	OH 0026638	4/30/82
41. Montgomery County - Eastern Regional	Kettering	OH 0026590	9/28/80
42. Ohio Suburban Water Co. (Huber Heights, P.U.C.O.)	Wayne Township	OH 0049298	7/17/84
43. Oxford	Oxford	OH 0026930	9/27/80
44. Piqua	Piqua	OH 0027049	9/28/80
45. Sidney	Sidney	OH 0027421	5/31/80
46. Springfield	Springfield	OH 0027481	6/30/82
47. Troy	Troy	OH 0027758	6/30/82
48. Urbana	Urbana	OH 0027880	9/20/80
49. Vandalia	Vandalia	OH 0027901	12/14/81
50. West Carrollton	West Carrollton	OH 0020133	11/29/83
51. Wilmington	Wilmington	OH 0028134	9/29/80
52. Xenia - Ford Road	Xenia	OH 0028193	9/20/80
53. Xenia - Glady Run	Xenia	OH 0028207	9/20/80
Northeast District			
54. Akron	Akron	OH 0023833	9/19/80
55. Alliance	Alliance	OH 0023868	9/28/80
56. Amherst	Amherst	OH 0021628	3/31/81
57. Ashtabula	Ashtabula	OH 0023914	9/26/80
58. Avon Lake	Avon Lake	OH 0023981	8/31/81
59. Barberton	Barberton	OH 0024007	5/31/82
60. Bedford	Bedford	OH 0024040	6/30/79
61. Bedford Heights	Bedford Heights	OH 0024058	9/19/80
62. Berea	Berea	OH 0024104	9/29/80
63. Brookpark	Brookpark	OH 0038024	5/31/80
64. Campbell	Campbell	OH 0024325	12/23/79
65. Canton	Canton	OH 0024350	9/27/80
66. Conneaut	Conneaut	OH 0024767	9/27/80
67. Cuyahoga County - Rocky River S.D. #6	Cuyahoga County	OH 0030503	9/27/80
68. Cuyahoga County - Brecksville S.D. #13	Cuyahoga County	OH 0024856	8/31/79

* * This facility will be deleted when it ties into the Regional Plant

September 1979

OHIO

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
69.	East Liverpool	East Liverpool	OH 0024970	*
70.	Elyria	Elyria	OH 0025003	9/20/80
71.	Euclid	Euclid	OH 0031062	6/30/82
72.	Geauga County - McFarland S.D.	Bainbridge Twp	OH 0043494	5/31/82
73.	Geneva Sub-area	Geneva	OH 0020109	*
74.	Girard	Girard	OH 0025364	*
75.	Kent	Kent	OH 0025917	9/22/80
76.	Lake County-Madison S.D.	Madison	OH 0036790	5/31/82
77.	Lake County-Mentor S.D.	Mentor	OH 0043559	4/30/82
78.	Lakewood	Lakewood	OH 0026018	9/20/80
79.	Lorain-East Side	Lorain	OH 0026093	9/20/80
80.	Mahoning County-Boardman S.D.	Boardman	OH 0037249	9/21/80
81.	Mahoning County-Meander S.D.	Mineral Ridge	OH 0045721	1/31/81
82.	Maple Heights	Maple Heights	OH 0026336	10/04/82
83.	Massillon	Massillon	OH 0020516	9/18/80
84.	Medina County S.D. #100	Brunswick	OH 0043583	6/01/80
85.	Medina County S.D. #200	Medina	OH 0043575	6/01/80
86.	Medina County S.D. #300	Hinckley Twp.	OH 0045748	2/01/84
87.	Medina County S.D. #500	Valley City	OH 0043567	9/20/80
88.	Medina County S.D. #2 - Wadsworth	Wadsworth	OH 0027936	9/27/80
89.	Middleburg Heights	Middleburg Heights	OH 0026506	9/28/80
90.	Niles	Niles	OH 0026743	6/30/82
91.	Northeast Ohio Regional S.D. Easterly	Cleveland	OH 0024643	5/31/82
92.	Northeast Ohio Regional S.D. Westerly	Cleveland	OH 0024660	5/31/82
93.	Northeast Ohio Regional S.D. Southerly	Cuyahoga Hts	OH 0024651	9/19/80
94.	North Olmsted	North Olmsted	OH 0026778	9/30/79
95.	North Royalton "A"	North Royalton	OH 0026794	9/19/80
96.	Oberlin	Oberlin	OH 0020427	3/31/81-
97.	Orrville	Orrville	OH 0020371	9/29/80
98.	OWDA (French Creek)	Sheffield	OH 0044512	5/15/82
99.	Painesville	Painesville	OH 0026948	9/19/80
100.	Ravenna	Ravenna	OH 0023221	5/31/82
101.	Salem	Salem	OH 0027324	9/20/80
102.	Solon - Central	Solon	OH 0027430	9/30/82
103.	Strongsville A	Strongsville	OH 0033693	9/21/80
104.	Struthers	Struthers	OH 0027600	12/18/79
105.	Summit County S.D. #15	Macedonia	OH 0027642	9/26/80
106.	Summit County #6 - N.E.S.D.	Hudson	OH 0043397	6/30/79

September 1979

OHIO

MUNICIPAL (Cont.)

	Name	Location	Permit No.	Expiration Date
107.	Trumbull County-Mosquito Creek	Howland Twp.	OH 0043401	*
108.	Twinsburg	Twinsburg	OH 0027863	10/30/81
109.	Warren	Warren	OH 0027987	6/30/82
110.	Willoughby - East Lake	Willoughby	OH 0028126	5/31/82
111.	Wooster	Wooster	OH 0028185	9/27/80
112.	Youngstown S.T.P.	Youngstown	OH 0028223	6/30/82
	Northwest District			
113.	Archbold	Archbold	OH 0020796	6/30/80
114.	Ashland	Ashland	OH 0023906	9/20/80
115.	Bowling Green	Bowling Green	OH 0024139	6/30/80
116.	Bryan	Bryan	OH 0020532	11/12/81
117.	Bucyrus	Bucyrus	OH 0052922	9/28/80
118.	Celina	Celina	OH 0020320	6/30/83
119.	Defiance	Defiance	OH 0024899	6/30/80
120.	Delphos	Delphos	OH 0024929	*
121.	Findlay	Findlay	OH 0025135	6/30/82
122.	Fostoria	Fostoria	OH 0052744	6/30/82
123.	Fremont	Fremont	OH 0025291	9/28/80
124.	Galion	Galion	OH 0025313	6/30/80
125.	Kenton	Kenton	OH 0025925	11/13/82
126.	Lima	Lima	OH 0026069	6/30/80
127.	Lucas County - Maumee River WWTP	Manclova Twp.	OH 0034223	6/30/80
128.	Mansfield	Mansfield	OH 0026328	9/29/80
129.	Marion	Marion	OH 0026352	9/28/80
130.	Mount Vernon	Mount Vernon	OH 0026662	9/18/80
131.	Norwalk	Norwalk	OH 0052604	9/22/80
132.	Oregon	Oregon	OH 0052914	9/18/80
133.	Perrysburg	Perrysburg	OH 0021008	*
134.	Port Clinton	Port Clinton	OH 0052876	*
135.	Sandusky	Sandusky	OH 0027332	6/30/80
136.	Shelby	Shelby	OH 0023540	9/21/80
137.	St. Mary's	St. Mary's	OH 0021415	*
138.	Tiffin	Tiffin	OH 0052949	9/27/80
139.	Toledo	Toledo	OH 0027740	6/30/82
140.	Upper Sandusky	Upper Sandusky	OH 0020001	*
141.	Van Wert	Van Wert	OH 0027910	9/18/80
142.	Vermillion	Vermillion	OH 0023612	6/30/80
143.	Wapakoneta	Wapakoneta	OH 0027952	9/21/80
144.	Willard	Willard	OH 0028118	*

September 1979

OHIO

MUNICIPAL (Cont.)

Name	Location	Permit No.	Expiration Date
Central District			
145. Circleville	Circleville	OH 0024465	9/19/80
146. Columbus - Jackson Pike	Columbus	OH 0024732	9/28/80
147. Columbus - Southerly	Columbus	OH 0024741	9/26/80
148. Delaware	Delaware	OH 0024911	9/26/80
149. Delaware County - Sanitary Sub-District 1A	Liberty Twp.	OH 0054399	9/29/80
150. Heath	Heath	OH 0025763	*
151. Lancaster	Lancaster	OH 0026026	9/19/80
152. Marysville	Marysville	OH 0020630	*
153. Newark	Newark	OH 0026671	9/29/80
154. Ohio Utilities Co. - Blacklick	Madison Twp.	OH 0036021	*
155. Reynoldsburg	Reynoldsburg	OH 0027243	6/30/82
156. Washington Court House	Washington Court House	OH 0028002	9/19/80

FEDERAL

Name	Location	Permit No.	Expiration Date
1. U.S. Department of Energy-Feed Materials Production Center	Fernald	OH 0009580	4/15/80
2. U.S. Department of Energy-Portsmouth Gaseous Diffusion Plant	Portsmouth	OH 0006092	4/15/80
3. U.S. Department of the Air Force-Rickenbacker A.F.B.	Columbus	OH 0021512	9/21/79

OHIO

September 1979

FY 1980 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

Name	Location	Permit No.	Expiration Date
Southeast District			
1. Allied Chemical Corp.	Ironton	OH 0007544	12/09/80
2. Ashland Oil Company	South Point	OH 0007714	12/29/79
3. Dover Chemical Corp.	Dover	OH 0007269	3/29/82
4. Empire Detroit Steel	Portsmouth	OH 0006068	12/31/80
5. Empire Detroit Steel	Dover	OH 0004910	9/30/80
6. Gould, Inc.	McConnelsville	OH 0048372	6/01/80
7. Gould, Inc.	McConnelsville	OH 0048364	6/01/80
8. Ironton Coke Corp.	Ironton	OH 0007579	9/27/81
9. Mead Corp.	Chillicothe	OH 0004481	12/01/79
10. National Steel Corp.	Steubenville	OH 0010774	8/05/80
11. Ormet Corporation	Hannibal	OH 0011550	5/18/80
12. Shell Chemical Co.	Belpre	OH 0007030	6/24/81
13. Stone Container Corp.	Coshocton	OH 0004235	12/15/79
14. Union Camp Corp.	Dover	OH 0007196	6/30/80
15. Union Carbide Corp.	Marietta	OH 0004006	*
16. Universal Cyclops Steel	Coshocton	OH 0004260	10/31/79
17. USS Chemicals	Haverhill	OH 0007391	8/03/81
18. Wheeling-Pittsburgh Steel Corp.	Steubenville	OH 0011355	11/03/79
19. Wheeling-Pittsburgh Steel Corp.	Yorkville	OH 0011371	
20. Wheeling-Pittsburgh Steel Corp.	Martins Ferry	OH 0011339	
21. Wheeling-Pittsburgh Steel Corp.	Mingo Junction	OH 0011347	
Southwest District			
22. Armco Steel Corp.	New Miami	OH 0009989	12/29/79
23. Armco Steel Corp.	Middletown	OH 0009997	12/21/81
24. Bergstrom Paper Co.	West Carrollton	OH 0009377	11/17/79
25. Crystal Tissue Co.	Middletown	OH 0009539	1/19/80
26. Gulf Oil (Cinci.Refinery)	Cleves	OH 0009326	2/23/80
27. Miami Paper Co.	West Carrollton	OH 0009784	5/18/80
28. Monsanto Co.	Addyston	OH 0009946	3/31/81
Northeast District			
29. Ashland Petroleum Co.	Canton	OH 0005657	3/23/80
30. BFI/Ecological	East Palestine	OH 0063223	
31. Chase Bag Co.	Chagrin Falls	OH 0000400	10/18/80
32. Chemline Corp.	Lisbon	OH 0051799	3/09/80
33. Copperweld Steel Co.	Warren	OH 0011207	9/30/79
34. Diamond Shamrock Chemical	Ashtabula	OH 0029149	3/31/81
35. E.I. DuPont de Nemours & Co., Inc.	Cleveland	OH 0000990	4/19/82

* Dates will be determined following reissuance

September 1979

OHIO

INDUSTRIAL (Cont.)

	Name	Location	Permit No.	Expiration Date
36.	Ford Motor Co.	Brook Park	OH 0001228	1/11/83
37.	General Electric Co.	Niles	OH 0011231	6/30/80
38.	General Electric Co.	Niles	OH 0011223	6/30/80
39.	GMC-Fisher Body	Elyria	OH 0000272	10/30/80
40.	G&W Natural Res. Gr.	Ashtabula	OH 0000493	3/31/81
41.	General Tire & Rubber Co.	Ashtabula	OH 0002283	3/31/81
42.	Glidden-Durkee Co.	Ashtabula	OH 0000523	3/31/81
43.	Harshaw Chemical Co.	Cleveland	OH 0000655	1/01/81
44.	IMC Chemical Group	Ashtabula	OH 0000752	8/01/81
45.	Jones & Laughlin Steel	Cleveland	OH 0000850	9/30/80
46.	Olin Corp.	Ashtabula	OH 0001376	3/31/81
47.	Packaging Corp. of America	Rittman	OH 0006718	1/20/80
48.	PPG Industries, Inc.	Barberton	OH 0005177	
49.	Republic Steel Corp.	Canton	OH 0006912	9/30/80
50.	Republic Steel Corp.	Cleveland	OH 0000957	9/30/79
51.	Republic Steel Corp.	Warren	OH 0011274	6/30/80
52.	Republic Steel Corp.	Massillon	OH 0006939	
53.	Republic Steel Corp.	Youngstown	OH 0011282	6/30/80
54.	RMI Co. (Sodium & Chlorine)	Ashtabula	OH 0002313	
55.	Thomas Strip Steel	Warren	OH 0011363	6/30/81
56.	Union Carbide Corp.	Ashtabula	OH 0000027	10/15/79
57.	U.S. Steel Corp.	Lorain	OH 0001562	6/01/81
58.	U.S. Steel Corp.	Youngstown	OH 0011916	12/28/82
59.	U.S. Steel Corp.	Youngstown	OH 0063215	12/28/82
60.	Youngstown Sheet & Tube	Struthers	OH 0063207	
61.	Youngstown Sheet & Tube	Youngstown	OH 0011312	
62.	Youngstown Sheet & Tube	Campbell	OH 0011321	

Northwest District

	Name	Location	Permit No.	Expiration Date
63.	Brush Wellman Co.	Elmore	OH 0002518	12/04/79
64.	Cyclops Corp. Empire Detroit Steel Dvn.	Mansfield	OH 0006840	5/19/80
65.	GMC-Central Foundry	Defiance	OH 0002666	2/10/81
66.	Gulf Oil Co.	Toledo	OH 0002810	7/21/80
67.	Hooker Chemical (Durez Dvn.)	Kenton	OH 0006769	3/20/80
68.	Libbey-Owens-Ford	Toledo	OH 0002445	11/10/79
69.	Ohio Decorative Products	Spencerville	OH 0002852	6/30/81
70.	J.H. Routh Packing	Sandusky	OH 0001643	12/19/81
71.	Standard Oil Co.	Lima	OH 0002623	3/31/80
72.	Standard Oil Co. (Ohio)	Toledo	OH 0002461	11/24/79

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OHIO

INDUSTRIAL (Cont.)

Name	Location	Permit No.	Expiration Date
73. Sun Oil Co.	Oregon	OH 0002763	3/31/80
74. Vistron Corp.	Lima	OH 0002615	9/05/79
75. Whirlpool Corp.	Marion	OH 0007358	5/06/80
76. Whirlpool Corp.	Clyde	OH 0000965	*
77. White-Westinghouse	Mansfield	OH 0004600	7/26/81

Central District

Name	Location	Permit No.	Expiration Date
78. Container Corp. of USA	Circleville	OH 0005681	3/31/81
79. Crown Zellerbach Corp.	New Baltimore	OH 0004961	10/20/79
80. E.I. Dupont de Nemours & Co., Inc.	Circleville	OH 0006327	10/30/80
81. Owens-Corning	Newark	OH 0007153	1/06/81
82. Owens Illinois	Columbus	OH 0006971	6/30/80
83. PPG Industries, Inc.	Circleville	OH 0004251	12/15/81

POWER PLANTS

Southeast District

Name	Location	Permit No.	Expiration Date
1. Columbus & Southern Ohio G&E	Conesville	OH 0005371	9/21/81
2. Dayton Power & Light	J. M. Stuart	OH 0004316	
3. Ohio Edison Co.	Burger	OH 0011592	4/13/82
4. Ohio Edison Co.	Sammis	OH 0011525	4/13/82
5. Ohio Power	Muskingum	OH 0006149	6/27/82
6. Ohio Power	Cardinal	OH 0012581	11/30/81
7. Ohio Valley Electric	Kyger Creek	OH 0005282	3/23/82

Southwest District

Name	Location	Permit No.	Expiration Date
8. Cincinnati Gas & Electric	W. C. Beckjord	OH 0009865	3/23/82
9. Cincinnati Gas & Electric	Miami Fort	OH 0009873	3/23/82
10. Dayton Power & Light	Hutchings	OH 0009261	6/16/82
11. Dayton Power & Light	Tait	OH 0009245	6/16/82

Northeast District

Name	Location	Permit No.	Expiration Date
12. Cleveland Electric Ill.	Eastlake	OH 0001139	
13. Cleveland Electric Ill.	Ashtabula	OH 0001121	

OHIO

POWER PLANTS (Cont.)

	Name	Location	Permit No.	Expiration Date
14.	Cleveland Electric Ill.	Avon Lake	OH 0001112	
15.	Cleveland Electric Ill.	Lake Shore	OH 0001147	
16.	Ohio Edison Co.	Niles	OH 0011533	2/20/83
17.	Ohio Edison Co.	Akron	OH 0000213	4/13/82

Northwest District

	Name	Location	Permit No.	Expiration Date
18.	Toledo Edison	Bayshore	OH 0002925	3/27/82
19.	Toledo Edison	Oak Harbor	OH 0003786	3/08/82

Central District

	Name	Location	Permit No.	Expiration Date
20.	Columbus & Southern Ohio Electric	Picway	OH 0054780	10/31/80

f. WISCONSIN

(1) Overview

Three agencies are involved in ambient monitoring in the State of Wisconsin. These agencies are the Wisconsin Department of Natural Resources (WDNR), the U.S. Geological Survey (USGS) and the U.S. Army Corps of Engineers (COE). Considering sampling parameters and frequency, there is no duplication in the network stations. The coverage provided by these networks meets the explicit intent of the Basic Monitoring Program. The program is intended to provide a data base which is representative of National Water Quality and trends. Wisconsin's Basic Monitoring Program has minor deficiencies in the areas of effluent monitoring, quality assurance and data reporting. Although Wisconsin's intensive survey program is considerably more active than most other states, the program can not be properly evaluated because abstracts were not submitted on the surveys completed. The intensive survey program and the other parts of the State program are discussed below in greater detail.

(2) Assessment of the State Monitoring Program

The Wisconsin Department of Natural Resources operates two fixed station networks. One is the basic network consisting of 29 National Ambient Water Quality Monitoring Stations, and the second is a State monitoring network consisting of 39 stations. Additionally, the USGS operates three networks in the State, and the Corps of Engineers operates a network. These networks are shown in Figures 18 and 19. An evaluation of each of these networks is presented below.

(a) National Ambient Monitoring Network

The Wisconsin Department of Natural Resources operates a basic network of 29 National Ambient Water Quality Monitoring stations. A listing of station locations and numbers for the basic network are provided in Table 11. These stations are shown in Figure 18.

TABLE 11
NATIONAL AMBIENT MONITORING STATIONS - WISCONSIN

Location	Station No.
Fox River at Berlin	243020
Rock River at Indianford	543017
Rock River at Afton	543001
Wisconsin River at Wisconsin Dells	573052
Fox (Illinois) River Waukesha	683096
Kinnickinnic River at Milwaukee	413069
Root River at Racine	523061
Sheboygan River at Sheboygan	603095
Fox River At Depre	053210

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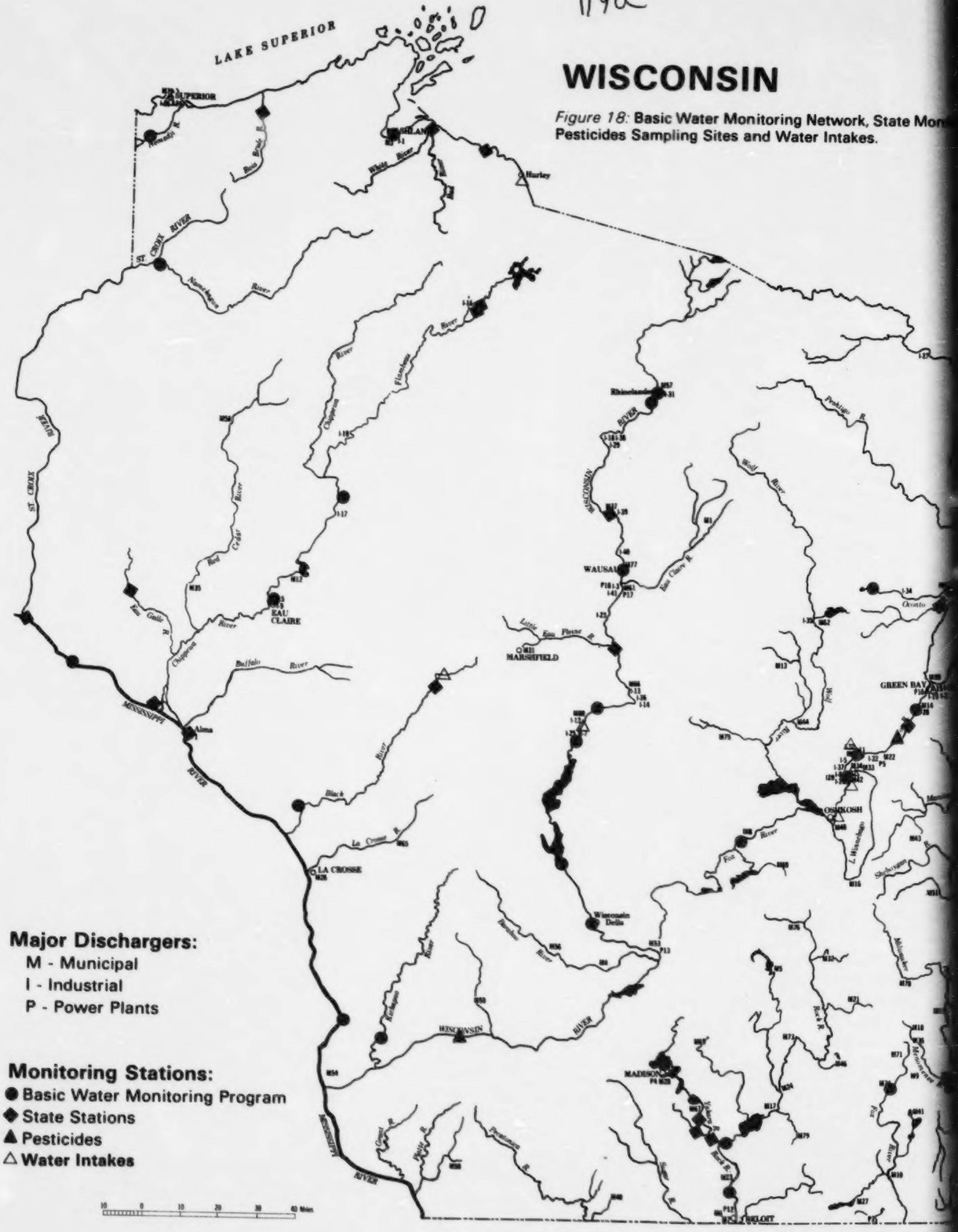
WISCONSIN

Figure 18: Basic Water Monitoring Network, State Mon
Pesticides Sampling Sites and Water Intakes.


LAKE SUPERIOR
SUPERIOR
ASHLAND
Hurley
Nemadji R.
Bois Brule R.
White River
Bad R.
ST. CROIX RIVER
Namekagon River
Flambeau River
Chippewa River
Red Cedar River
Eau Galle R.
Chippewa River
Buffalo River
EAU CLAIRE
MISSISSIPPI RIVER
Alma
Black River
La Crosse R.
LA CROSSE
Rhinelander
WISCONSIN RIVER
WAUSAU
Eau Claire R.
Little Eau Pleine R.
MARSHFIELD
Wisconsin Dells
Baraboo River
WISCONSIN RIVER
Kickapoo R.
Grant R.
Platte R.
Pecatonica R.
MADISON
Yahara R.
Rock R.
BELOIT
Sugar R.
Peshtigo R.
Oconto
Wolf River
Fox River
OSHKOSH
L. Winnebago
GREEN BAY
Sheboygan R.
Milwaukee R.
Menomonee R.
Fox River
10 0 10 20 30 40 Miles

Major Dischargers:

M - Municipal

I - Industrial

P - Power Plants

Monitoring Stations:

● Basic Water Monitoring Program

◆ State Stations

▲ Pesticides

△ Water Intakes

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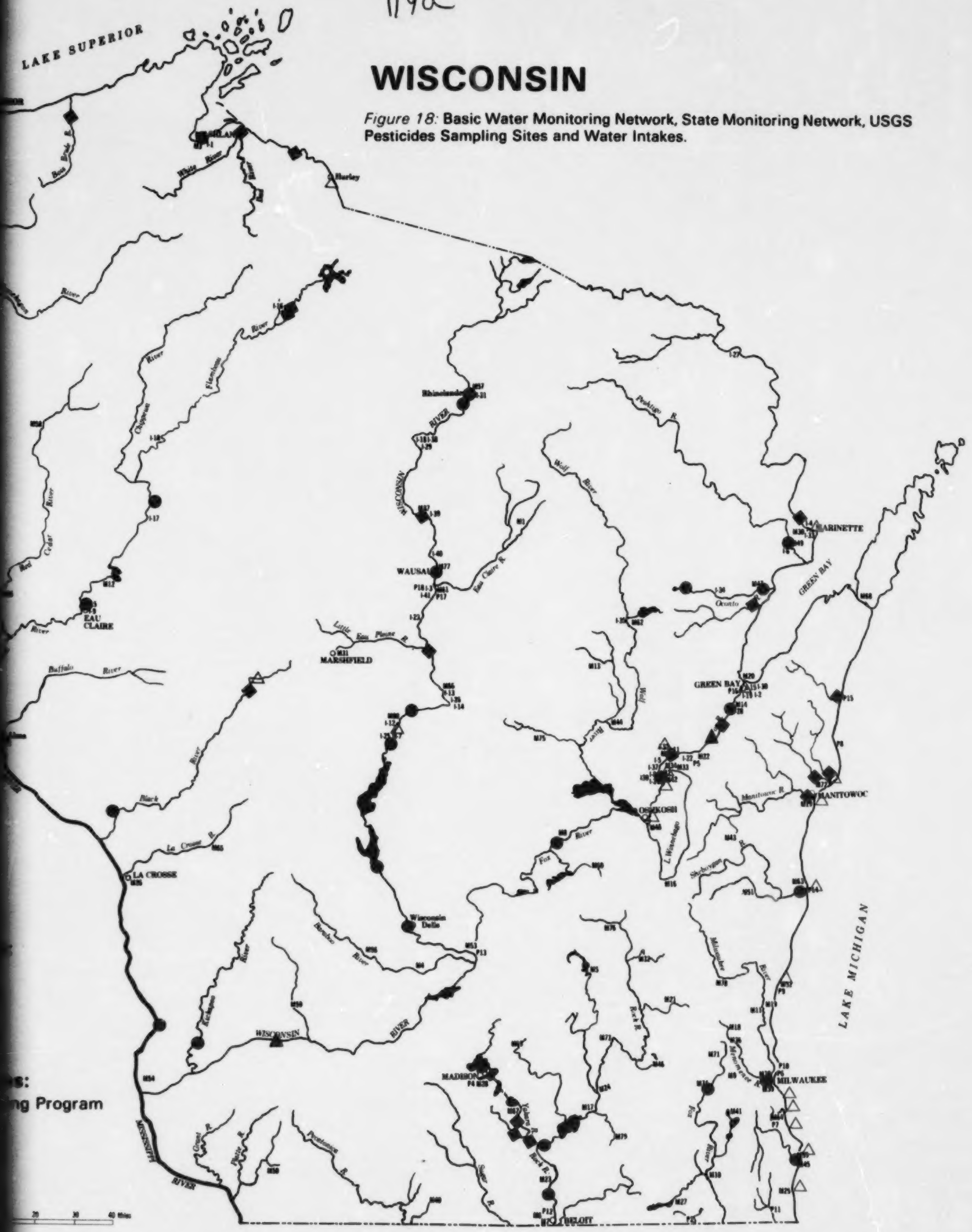
WISCONSIN

Figure 18: Basic Water Monitoring Network, State Monitoring Network, USGS Pesticides Sampling Sites and Water Intakes.



LAKE SUPERIOR
ASHLAND
Hurley
White River
Bad River
River
Chippewa
Flambeau
River
Red Cedar River
EAU CLAIRE
Buffalo River
Black River
La Crosse R.
LA CROSSE
Rhinelander
WISCONSIN RIVER
WAUSAU
Eau Claire R.
Little Eau Plaine R.
MARSHFIELD
Wisconsin Dells
Baraboo River
Kickapoo River
WISCONSIN RIVER
MISSISSIPPI RIVER
Grant R.
Platte R.
Pecatonica R.
Sugar R.
MADISON
Yahara R.
Rock R.
BELOIT
Peshtigo R.
MARINETTE
Wolf River
Oconto
GREEN BAY
GREEN BAY
Fox River
OSHKOSH
L. Winnebago
Manitowoc R.
MANITOWOC
Sheboygan R.
Milwaukee River
Menomonee R.
MILWAUKEE
Fox River
LAKE MICHIGAN
20
30
40 Miles

s:

ng Program

TABLE 11 (Cont'd)
NATIONAL AMBIENT MONITORING STATIONS - WISCONSIN

Location	Station No.
Fox River at Neenah-Menasha	713002
Oconto River at Neak Gillett	433003
Oconto River at Oconto	433002
Peshtigo River at Peshtigo	383001
Wolf River at New London	693035
Wisconsin Power at Petenwell Dam	013001
Wisconsin River at Biron	723002
Wisconsin River at Nekoosa	723220
Wisconsin River at Rhinelander	443001
Wisconsin River at Rhinelander	443002
Wisconsin River at Wausau	373001
Black River near Galesville	623107
Chippewa River at Eau Claire	183057
Chippewa River at Holcombe Dam	093051
Kickappoo River at Steuben	123017
Mississippi River near Lynxville	123016
Mississippi River near Red Wing, Mn.	483027
Namekagon River near Riverside	073002
Nemadji River near Superior	163003

Based on a 1979 STORET retrieval of 7 stations, the parameter coverage complies with the minimum parameter list and sampling frequency for the Basic Ambient Water Monitoring Program except for fish tissue analyses. The fish monitoring program for ambient stations began in 1977. The organic analyses results for 1978 and all of the fish analyses results for 1980 must be entered into STORET. Description forms have been submitted for each designated station.

(b) State Monitoring Network

The Wisconsin Department of Natural Resources has established a State Ambient Water Monitoring network consisting of 39 stations. These stations were designed to provide the data needed for such information as loadings to the Great Lakes, intermediate sites to the national network stations, and trend data in water use areas. Also, the network was designed to expand the State's overall monitoring of surface water.

The State network is broken into two levels, I and II. Basically the only difference between these levels is the station parameter coverage. Eighteen stations were selected for the State level I network. The parameter coverage is as follows:

Minimum Parameter Coverage
State I Network

Parameter (units)	STORET Parameter Code	Sampling Frequency
Temperature (°C)	00010	monthly
Dissolved Oxygen (mg/l)	00300	monthly
ph (standards units)	00400	monthly
conductivity (umnos/cm @ 25°C)	00095	monthly
BOD5 (mg/l)	00310	monthly
Fecal Coliform (count/100 ml)	31616	monthly
Total Phosphorus (mg/l)	00665	monthly
Soluble Reactive Phosphorus (mg/l)	00671	monthly
Total Kjeldahl Nitrogen (mg/l)	00625	monthly
Organic Nitrogen (mg/l)	00605	monthly
Ammonia Nitrogen (mg/l)	00610	monthly
Nitrate + Nitrite Nitrogen (mg/l)	00630	monthly
Total Non-filtrable Residue (mg/l)	00530	monthly

These analyses are similar to the minimum parameter list and frequency of sampling for the Basic Monitoring Program with the exception of chemical oxygen demand, and flow, which are not analyzed.

State network level II consists of 21 stations, ten of which are to monitor loadings to the Great Lakes. The others 11 stations provide data to supplement the overall monitoring within the State, or provide data from water sheds of unknown water quality. The parameter coverage is as follows:

Minimum Parameter Coverage
State II Network

Parameter (units)	STORET Parameter Code	Sampling Frequency
Temperature (°C)	00010	monthly
Dissolved Oxygen (mg/l)	00300	monthly
pH (standard units)	00400	monthly
Conductivity (umhos/cm@ 25°C)	00095	monthly
BOD5 (mg/l)	00310	monthly
Fecal Coliform (count/100ml)	31616	monthly
Total Phosphorous (mg/l)	00665	monthly
Soluble reactive Phosphorous (mg/l)	00671	monthly
Total Non-Filtrable Residue (mg/l)	00530	monthly

These analyses are similar to the minimum parameter list and frequency of sampling for the Basic Monitoring Program with the exception of chemical oxygen demand, total Kjeldahl mitrogen, nitrate plus nitrite nitrogen, and flow, which are not analyzed.

Both the State I and II networks are shown in Figure 18.

(c) U.S. Geological Survey

The USGS operates three networks in the State of Wisconsin. These are (1) a Sediment Station Network, (2) the NASQAN network and (3) the Hydrologic Benchmark Program. These networks are shown in Figures 18 and 19, and are discussed in detail below.

1. Sediment Station Network

The USGS operates a network consisting of 13 sediment stations throughout the State. Nine of these are funded by the Corps of Engineers, one station is funded by the Dane County Regional Planning Commission (Willow Creek at Madison), and three are GREAT (Great River Environmental Action Team) stations, also funded by the Corps of Engineers. The latter three stations also are part of the NASQAN network. With the exception of the NASQAN stations, the only analytical work done on samples collected is for determination of suspended sediment concentration and bed-material particle-size distribution. Samples are collected six times annually at 7 of the stations, and daily at six of the stations.

2. NASQAN Stations

The USGS also operates a network of 10 NASQAN stations throughout the State of Wisconsin. Water temperature and specific conductance are continuously recorded at 3 of the 10 stations. These water properties are measured once daily at the other seven stations. Also, 3 of the 10 stations are part of National Pesticide Monitoring Network. These 3 stations are montitored 4 times per year. One station is also part of the radiochemical monitoring network.

The parameter coverage for these stations complies with the minimum parameter list as required for the Basic Monitoring Program with the exception of chemical oxygen demand, fecal coliform and representative fish tissue analysis. In addition, analyses are run on a wide variety of inorganic parameters, heavy metals, phytoplankton, periphyton, and chlorophyll. Pesticides are run on the pesticide monitoring stations. Radiochemical tests are run on the radiochemical monitoring station. In general, the sampling frequencies for the various parameters for the NASQAN stations are not in conformance with the requirements of the Basic Monitoring Program.

3. Hydrologic Benchmark Station

The USGS operates one Benchmark station in the State of Wisconsin. This station is sampled 12 times annually for the following parameters: water temperature, specific conductance, pH, dissolved-oxygen concentration, and instantaneous water discharge. Water samples also are collected for the determination of fecal coliform and fecal streptococci bacteria.

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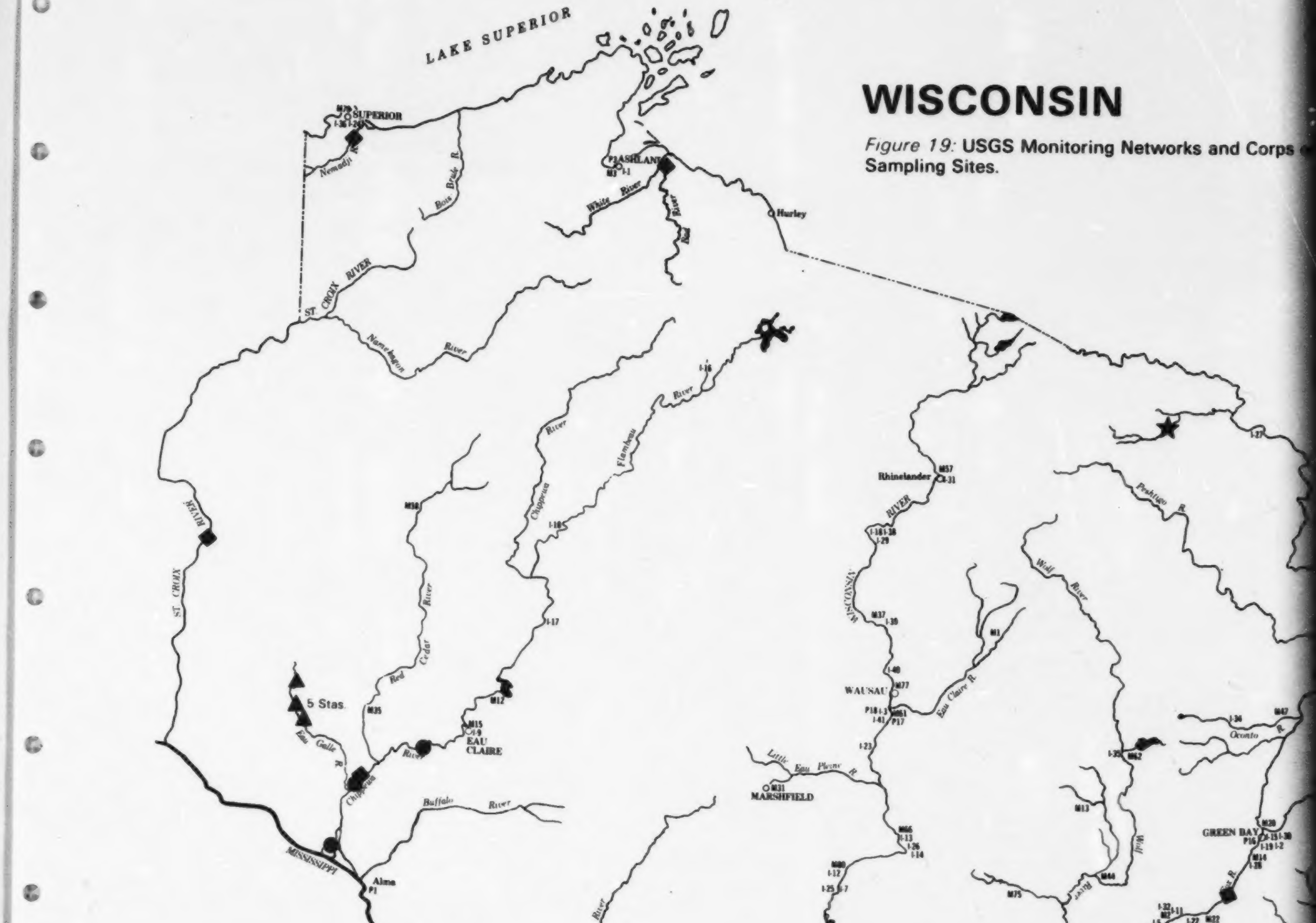
Figure 19: USGS Monitoring Networks and Corps
Sampling Sites.


LAKE SUPERIOR
SUPERIOR
Nemadji R.
Bois Brule R.
ASHLAND
White River
Bad River
Hurley
ST. CROIX RIVER
Namekagon River
ST. CROIX RIVER
Chippewa River
Flambeau River
Red Cedar River
5 Stas.
Eau Galle R.
Chippewa River
EAU CLAIRE
Buffalo River
MISSISSIPPI RIVER
Alma
Black River
La Crosse R.
LA CROSSE
Rhinelander
WISCONSIN RIVER
WAUSAU
Eau Claire R.
Little Eau Pleine R.
MARSHFIELD
Peshtigo R.
Wolf River
Oconto
GREEN BAY
Wolf River
OSHKOSH
L. Winnebago
Fox River
Manitowoc R.
Sheboygan R.
Wisconsin Dells
Baraboo River
Kickapoo River
WISCONSIN RIVER
MADISON
Yahara R.
Rock R.
Milwaukee River
Menomonee R.
Fox River
Grant R.
Platte R.
Pecatonica R.
Sugar R.
BELOIT
MISSISSIPPI RIVER
10 0 10 20 30 40 Miles

Major Dischargers:

M - Municipal
I - Industrial
P - Power Plants

Monitoring Stations:

◆ NASQAN Stations USGS
● USGS Sediment Stations
★ Benchmark USGS
▲ Corps of Engineers

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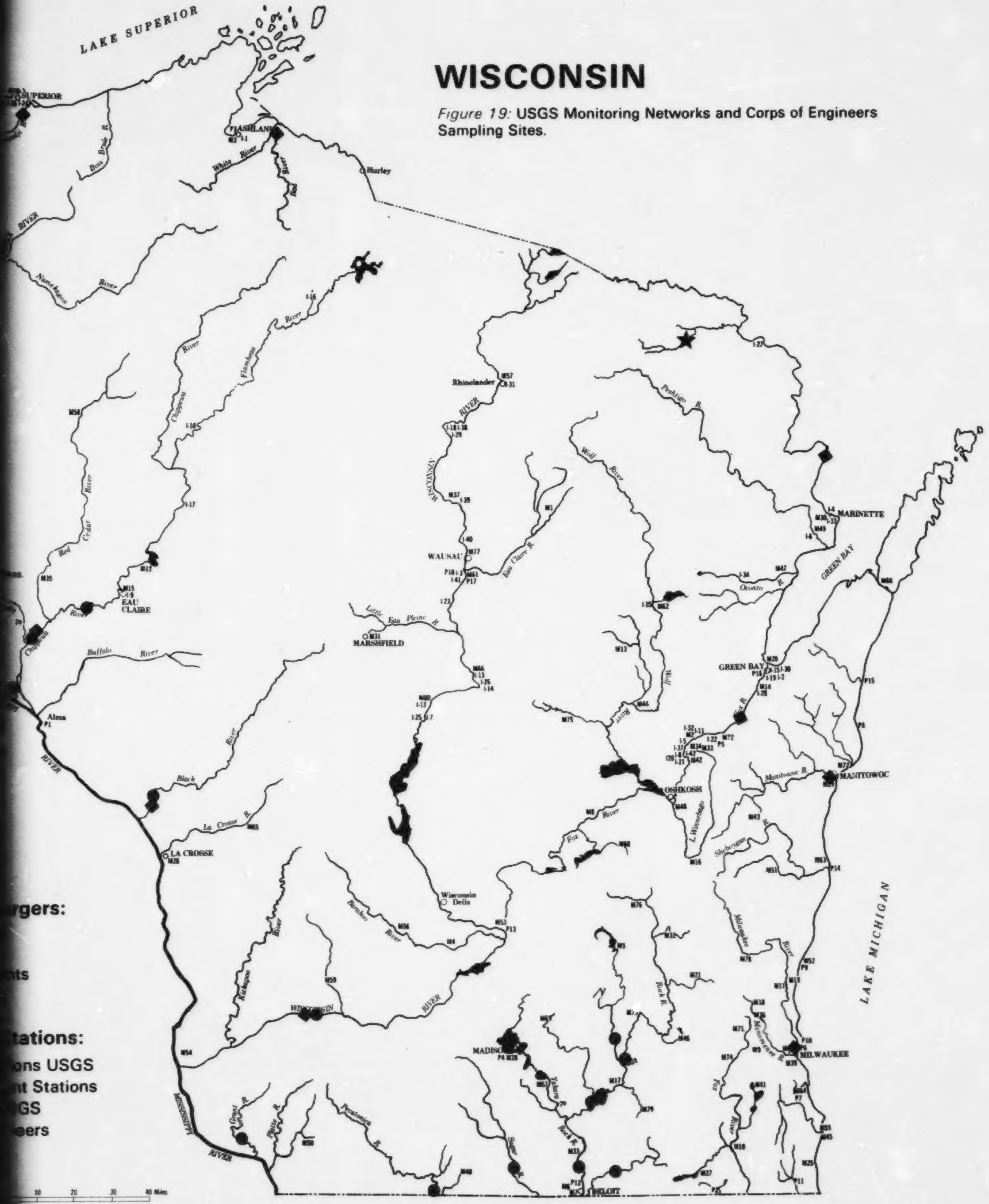
Figure 19: USGS Monitoring Networks and Corps of Engineers Sampling Sites.


LAKE SUPERIOR
SUPERIOR
ASHLAND
Hurley
Bois Brule R.
White River
Bad River
RIVER
Namekagon River
Flambeau River
Chippewa River
Red Cedar River
Rhinelander
WISCONSIN RIVER
WAUSAU
Eau Claire R.
Peshtigo R.
MARINETTE
GREEN BAY
Wolf River
Oconto R.
EAU CLAIRE
Chippewa River
Buffalo River
Little Eau Pleine R.
MARSHFIELD
GREEN BAY
Fox R.
Alma
RIVER
Black River
La Crosse R.
LA CROSSE
OSHKOSH
L. Winnebago
Manitowoc R.
MANITOWOC
Fox River
Sheboygan R.
Wisconsin Dells
Baraboo River
Kickapoo River
WISCONSIN RIVER
LAKE MICHIGAN
Milwaukee River
Rock R.
Menomonee R.
MILWAUKEE
MADISON
Yahara
Rock R.
Sugar R.
Pecatonica R.
Grant R.
Platte R.
MISSISSIPPI RIVER
Fox River
BELOIT
10
20
30
40 Miles

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The parameter coverage for these stations complies with the minimum parameter list as required for the Basic Monitoring Program, with the exception of chemical oxygen demand, fecal coliform, and representative fish tissue analysis, which are not analyzed.

In addition, analyses are run on a wide variety of inorganic parameters, heavy metals, toxic organics, and radiochemical parameters. Sampling frequencies for the various parameters for the Hydrologic Benchmark station are not in conformance with the requirements of the Basic Monitoring Program.

(d) U.S. Army Corps of Engineers

The Army Corps of Engineers sampling in Wisconsin is confined to just one area is the State, the Eau Galle River and Reservoir. Water quality data is collected on the Eau Galle River, both upstream and downstream of the Eau Galle Reservoir and 5 locations in the reservoir itself for the purpose of ecological modeling. There are a total of 9 stations. These stations are shown in Figure 19.

Parameters measured during the period from Augsut 1978 to August 1979 were as follows:

	DEPTH	
PARAMETER	RIVER	LAKE
Temperature	.6	Profile
Specific Conductance	"	Surface & Bottom
Dissolved Oxygen	"	Profile
pH	"	"
Chlorophyll A	"	"
Suspended Solids	"	"
Particulate Organic Carbon	"	"
Total Phosphorus	"	"
Particulate Phosphorus	"	"
Dissolved Phosphorus	"	"
Nitrate	"	"
Ammonia	"	Near Bottom
Subsurface light	.6	Profile
Photosynthesis	—	"
Secchi Disc	—	

These analyses do not conform to the minimum parameter list of the Basic Water Monitoring Program. However, as pointed out above, sampling is done for a special purpose at these locations.

(3) Major dischargers -Fixed Station Network

A review of Figures 18 and 19, showing the locations of major dischargers together with the locations of the monitoring stations, reveals that 38 major dischargers are not being monitored by any network station within a distance of 15 miles. Although there are no criteria relating dischargers to downstream monitoring, the information is considered relevant, particularly for those interested in modeling or waste load allocation studies. These major dischargers are listed in Table 12 below. A complete listing of all major dischargers in the State of Wisconsin is presented in the Attachment.

TABLE 12
MAJOR DISCHARGERS NOT MONITORED-WISCONSIN

Dischargers

1. Wisconsin Electric Power Co, Pleasant Prairie
2. Wisconsin Electric Power Co., Oak Creek
3. South Milwaukee WWTP
4. Muskego N.W. Dist. WWTP
5. Burlington WWTP
6. Lake Geneva WWTP
7. Dairyland Power Coop., Genoa #1,2, & 3
8. Beloit WWTP #1
9. Beloit WWTP #2
10. Wisconsin Power & Light Co. (Rock River), Beloit
11. Whitewater WWTP
12. Fort Atkinson WWTP
13. Oconomowoc WWTP
14. Hartford WWTP
15. West Bend WWTP
16. Mayville WWTP
17. Beaver Dam WWTP
18. Sun Prairie WWTP
19. Monroe WWTP
20. Platteville WWTP
21. Baraboo WWTP
22. Portage WWTP
23. Wisconsin Power & Light Co., Portage
24. Reedsburg WWTP
25. Prairie du Chien WWTP
26. Fond du Lac WWTP
27. New Holstein WWTP
28. Waupun WWTP
29. Shawano Lake San. Dist. #1 WWTP
30. Shawano paper Mills, Inc. Shawano
31. Niagara of Wisconsin paper Co., Niagara
32. Sparta WWTP
33. LaCrosse WWTP
34. Rice Lake WWTP
35. Flintkote Co., Cornell
36. Antigo WWTP
37. Marshfield WWTP
38. Green Bay Packaging, Inc., Green Bay

(4) Quality Assurance Program

The State of Wisconsin has not collated a total quality assurance (QA) document for the total monitoring effort. Therefore, data quality cannot be verified, based on those QA principles required by the Agency in a centrally managed QA program even though the State has excellent analytical capability.

Management has identified a QA element for environmental monitoring. The QA Coordinator has responsibility for management of QA activities for the States total environmental monitoring program (including air, water supply, solid waste, toxics, and hazardous waste). This positive approach to QA exemplifies the strong leadership and commitment of management to implement a strong QA program. The State is the first Region V State to centralize all media QA activities under one umbrella, so complete integration of the States QA program is achieved. Laboratory methodology and field sampling documentation is approximately 85% complete and is scheduled for completion by the end of the 3rd quarter of FY '81. Based on the State's commitment to QA,the final program should be found to be acceptable for meeting the Agency's QA requirements.

(5) Intensive Survey Program

Four waste load allocation surveys were completed during FY 1979. This compares to a commitment to complete 10 surveys. These surveys were completed down stream of wastewater treatment plants near the following cities, Bloomer, West Bend, Monroe and Belgium. The data collected will be used to develop stream models. Abstracts were not submitted for the surveys that were completed. However, a wasteload allocation report for the city of Monroe has been submitted.

(6) Effluent Monitoring Program

In the State of Wisconsin there are 140 major dischargers; 80 municipal and 60 non-municipal. Inspections planned and completed during FY 1979 were as follows:

	Projected	Accomplished
Compliance Sampling Inspections (CSI)	102	
Municipal		38
Non-Municipal		44

	Projected	Accomplished*
Compliance Evaluation Inspections (CEI)	15	
Municipal		19
Non-Municipal		6
Toxics	0	
Municipal		0
Non-Municipal		0

*As of 4/11/80

Committtments were not made to complete a CSI or CEI at all major dischargers during fiscal year 1979. The State committed to 102 CSIs and 15 CEI surveys. They did not meet their commitment for CSI surveys, completing 82 out of 102 committed. They exceeded their commitements for CEI surveys, completing 25 against a commitment of 15. No commitments were made for any toxic surveys or minor discharger inspections.

It should be noted that the results of compliance monitoring (State and Federal) for FY 79 reveals 74 percent of municipal and 78 percent of non-municipal major dischargers are in compliance with their permtis.

The State's effluent monitoring inspection program is effective. They are submitting the required NPDES compliance forms. In instances where violations were found, appropriate enforcement action was taken by the State.

(7) Proposed Biological Monitoring Program

The proposed biological monitoring program was not implemented by the State of Wisconsin in 1979. Data collected in past years were evaluated and, as a result, it was determined that the State would drop the program. The State is developing its own network of stations, some of which may be at or near the National network stations.

(8) Data Interpretation & Reporting

Using the Section 305(b) reporting process, the State of Wisconsin has submitted biennially a report to the USEPA describing the quality of their waters. The latest report submitted was for the years 1978 - 79.

Ambient Data

The State of Wisconsin submitted their ambient water quality data for storage into the STORET system. The data were submitted quarterly. A BIO-STORET scan of Region V shows that Wisconsin is the only State that has entered biological data into the system.

Effluent Data

Upon completion of an inspection the State submitted a report of each sampling and evaluation inspection of a major discharger to the Enforcement Division.

Intensive Survey Data

Abstracts were not submitted for FY 1979.

September 1979

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FY 1980 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	Name	Location	Permit No.	Expiration Da
1.	Antigo- City of, STP	Town of Rolling	WI 0022144	6/30/79
2.	Appleton- City of, STP	Appleton	WI 0023221	12/31/78
3.	Ashland- City of, STP	Ashland	WI 0030767	7/31/79
4.	Baraboo- City of, STP	Baraboo	WI 0020605	12/31/81
5.	Beaver Dam- City of, STP	Beaver Dam	WI 0023345	12/31/81
6.	Beloit- Town of, STP	Beloit	WI 0023370	6/30/84
7	Beloit- Town of, STP	Beloit	WI 0026930	6/30/84
8.	Berlin- City of, STP	Berlin	WI 0021229	3/31/82
9.	Brookfield- City of, STP	Brookfield	WI 0023469	9/30/80
10.	Burlington- City of, STP	Burlington	WI 0022926	5/31/84
11.	Cedarburg- City of, STP	Cedarburg	WI 0020222	6/30/82
12.	Chippewa Falls- City of, STP	Chippewa Falls	WI 0023604	3/31/82
13.	Clintonville- City of, STP	Clintonville	WI 0021466	6/30/82
14.	DePere- City of, STP	DePere	WI 0023787	6/30/79
15.	Eau Claire- City of, STP	Eau Claire	WI 0023850	6/30/82
16.	Fond du Lac- City of, STP	Fond du Lac	WI 0023990	6/30/84
17.	Fort Atkinson- City of, STP	Fort Atkinson	WI 0022489	6/30/82
18.	Germantown- Village of, STP	Germantown	WI 0020567	6/30/82
19.	Grafton- Village of, STP	Grafton	WI 0020184	3/31/82
20.	Green Bay- MSD STP	Green Bay	WI 0020991	3/31/84
21.	Hartford- City of, STP	Hartford	WI 0020192	12/31/79
22.	Heart of the Valley MSD STP	Kaukauna	WI 0031232	12/31/79
23.	Janesville- City of, STP	Janesville	WI 0030350	6/30/79
24.	Jefferson- City of, STP	Jefferson	WI 0024333	6/30/82
25.	Kenosha- City of, STP	Kenosha	WI 0028703	3/31/79
26.	LaCrosse- City of, STP	LaCrosse	WI 0029581	3/31/84
27	Lake Geneva- City of, STP	Lake Geneva	WI 0021130	6/30/81
28.	Madison- MSD STP	Madison	WI 0024597	6/30/82
29.	Manitowoc- City of, STP	Manitowoc	WI 0024601	6/30/79
30.	Marinette- City of, STP	Marinette	WI 0026182	3/31/84
31.	Marshfield- City of, STP	Marshfield	WI 0021024	6/30/79
32.	Mayville- City of, STP	Mayville	WI 0024643	12/31/81
33.	Menasha- S.D. #4, East Side STP	Menasha	WI 0025909	6/30/82
34.	Menasha- S.D. #4, West Side STP	Menasha	WI 0024686	6/30/82
35.	Menomonie- City of, STP	Menomenie	WI 0024708	3/31/84
36.	Menomonee Falls- City of, STP	Menomonee Falls	WI 0025381	6/30/82
37.	Merrill- City of, STP	Merrill	WI 0020150	3/31/84
38.	Milwaukee- SWG, Comm-Jones Island STP	Milwaukee	WI 0024767	6/30/82
39.	Milwaukee- SWG, Comm-South Shore STP	Milwaukee	WI 0024775	6/30/82
40.	Monroe- City of, STP	Monroe	WI 0020362	6/30/82
41.	Muskego N.W. Dist, STP	Muskego	WI 0021164	3/31/79
42.	Neenah-Menasha- SWG Comm STP	Neenah-Menasha	WI 0026085	12/31/79

ATTACHMENT 1

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MUNICIPAL (Continued)

	Name	Location	Permit No.	Expiration Date
43.	New Holstein- City of, STP	New Holstein	WI 0020893	6/30/82
44.	New London- City of STP	New London	WI 0024929	3/31/79
45.	North Park- S.D. STP	North Park	WI 0022900	6/30/84
46.	Oconomowoc- City of, STP	Oconomowoc	WI 0021181	3/31/84
47.	Oconto- City of, STP	Oconto	WI 0022861	6/30/82
48.	Oshkosh- City of, STP	Oshkosh	WI 0025038	3/31/84
49.	Peshtigo- City of, WTR & SWR Utl. STP	Peshtigo	WI 0030651	6/30/79
50.	Platteville- City of, STP	Platteville	WI 0020435	6/30/82
51.	Plymouth- City of, STP	Plymouth	WI 0030031	1/31/84
52.	Port Washington, City of, STP	Port Washington	WI 0020460	3/31/84
53.	Portage- City of, STP	Portage	WI 0020427	12/31/78
54.	Prairie du Chien- City of, STP	Prairie Du Chien	WI 0020257	3/31/84
55.	Racine- City of, STP	Racine	WI 0025194	3/31/79
56.	Reedsburg- City of, STP	Reedsburg	WI 0020371	3/31/79
57.	Rhinelander- City of, STP	Rhinelander	WI 0020044	3/31/79
58.	Rice Lake-City of, STP	Rice Lake	WI 0021865	6/30/82
59.	Richland Center- City of, STP	Richland Center	WI 0020109	6/30/79
60.	Ripon- City of, STP	Ripon	WI 0021032	6/30/82
61.	Rothschild- City of, STP	Rothschild	WI 0030279	3/31/79
62.	Shawano Lake S. D. #1, STP	Shawano	WI 0028452	6/30/79
63.	Sheboygan, City of, STP	Sheboygan	WI 0025411	6/30/79
64.	South Milwaukee, City of, STP	South Milwaukee	WI 0028819	6/30/79
65.	Sparta, City of, STP	Sparta	WI 0020737	6/30/82
66.	Stevens Point- City of, STP	Stevens Point	WI 0029572	6/30/79
67.	Stoughton- City of, STP	Stoughton	WI 0020338	6/30/79
68.	Sturgeon Bay- City of, STP	Sturgeon Bay	WI 0021113	3/31/79
69.	Sun Prairie- City of, STP	Sun Prairie	WI 0020478	6/30/82
70.	Superior- City of, STP	Superior	WI 0025593	6/30/82
71.	Sussex- Village of, STP	Sussex	WI 0020559	6/30/79
72.	Two Rivers- City of, STP	Two Rivers	WI 0026590	6/30/79
73.	Watertown- City of, STP	Watertown	WI 0028541	6/30/82
74.	Waukesha- City of, STP	Waukesha	WI 0029971	6/30/82
75	Waupaca- City of, STP	Waupaca	WI 0036490	6/30/79
76.	Waupun- City of, STP	Waupun	WI 0022772	12/31/81
77.	Wausau- City of, STP	Wausau	WI 0025739	6/30/79
78.	West Bend- City of, STP	West Bend	WI 0025763	6/30/79
79.	Whitewater- City of, STP	Whitewater	WI 0020001	6/30/82
80.	Wisconsin Rapids- City of, STP	Wisconsin Rapids	WI 0025844	4/30/79

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FY 1980 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

	Name	Location	Permit No.	Expiration Date
1.	American Can Co.	Ashland	WI 0003140	9/30/80
2.	American Can Co.	Green Bay	WI 0001261	9/30/80
3.	American Can Co.	Rothschild	WI 0003450	9/30/80
4.	Ansul Company	Marinette	WI 0001040	9/30/79
5.	Appleton Papers, Inc.	Combined Locks	WI 0000990	3/31/80
6.	Badger Paper Mills, Inc.	Peshtigo	WI 0000663	9/30/80
7.	BASF Wayandotte Corp.	Port Edwards	WI 0003565	9/30/80
8.	Bergstrom Paper Co. (Glatfelter, P.H.)	Neenah	WI 0001121	9/30/80
9.	Brown Co. (Sterling Op)	Eau Claire	WI 0003077	9/30/80
10.	Brown Company	Ladysmith	WI 0003204	9/30/80
11.	Consolidated Papers, Inc.	Appleton	WI 0001082	9/30/80
12.	Consolidated Papers, Inc.	Wisconsin Rapids	WI 0037991	3/31/80
13.	Consolidated Papers, Inc.	Stevens Point	WI 0003344	9/30/80
14.	Consolidated Papers, Inc.	Whiting	WI 0003468	9/30/80
15.	Fort Howard Paper Co.	Green Bay	WI 0001848	9/30/80
16.	Flambeau Paper Corp.	Park Falls	WI 0003212	12/26/79
17.	Flintkote Company, The	Cornell	WI 0003034	9/30/80
18.	Georgia Pacific Corp.	Tomahawk	WI 0003603	9/30/80
19.	Green Bay Packaging, Inc.	Green Bay	WI 0000973	9/30/80
20.	Kimberly Clark Corp.	Neenah	WI 0037842	9/30/80
21.	Kimberly Clark Corp. (Lakeview Mill)	Neenah	WI 0000680	9/30/80
22.	Midtec Paper Corp.	Kimberly	WI 0000698	12/31/79
23.	Mosinee Paper Corp.	Mosinee	WI 0003671	3/31/80
24.	Murphy Oil Corp. (Refinery)	Superior	WI 0003085	12/31/79
25.	Nekoosa Papers, Inc.	Nekoosa-Port Edwards	WI 0003620	9/30/80
26.	Nekoosa Papers, Inc.	Whiting	WI 0003611	9/30/80
27.	Niagara of Wisconsin Paper Co.	Niagara	WI 0000752	12/31/79
28.	Nicolet Paper Corp.	West De Pere	WI 0001473	9/30/80
29.	Owens-Illinois, Inc.	Tomahawk	WI 0002810	9/30/80
30.	Proctor & Gamble Paper Products Co.	Green Bay	WI 0001031	9/30/80
31.	Rhinelander Paper Co. (Div. of Monarch Paper	Rhinelander	WI 0003026	9/30/80
32.	Riverside Paper Co.	Appleton	WI 0000591	9/30/80
33.	Scott Paper Co.	Marinette	WI 0000540	9/30/80
34.	Scott Paper Co.	Oconto Falls	WI 0000531	11/30/79
35.	Shawano Paper Mills, Inc.	Shawano	WI 0001341	9/30/80
36.	Superior Fiber Prods. Inc.	Superior	WI 0002798	3/31/80
37.	Thilmany Pulp & Paper Co. (Div. of Hammermill Paper Co.)	Menasha	WI 0000825	9/30/80

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INDUSTRIAL (Cont.)

	Name	Location	Permit No.	Expiration Date
38.	Tomahawk Power & Pulp Co.	Tomahawk	WI 0003387	9/30/80
39.	Ward Paper Co.	Merrill	WI 0003719	9/30/80
40.	Wausau Paper Mills Co.	Brokaw	WI 0003379	3/31/80
41.	Weyerhaeuser Corp.	Rothschild	WI 0026042	9/30/80
42.	Wisconsin Tissue Mills	Menasha	WI 0037389	12/31/83

POWER PLANTS

1.	Dairyland Power Coop.	Alma (#6)	WI 0040223	5/30/81
2.	Dairyland Power Coop.	Genoa #1, 2 & 3	WI 0003239	9/30/79
3.	Lake Superior Dist. Power Co.	Bayfront	WI 0002887	9/30/79
4.	Madison Gas & Electric Power Co.	Madison	WI 0001961	9/30/79
5.	Wisconsin Electric Power Co.	Commerce	WI 0000892	9/30/79
6.	Wisconsin Electric Power Co.	Lakeside	WI 0000906	9/30/79
7.	Wisconsin Electric Power Co.	Oak Creek	WI 0000914	9/30/79
8.	Wisconsin Electric Power Co.	Point Beach	WI 0000957	9/30/79
9.	Wisconsin Electric Power Co.	Port Washington	WI 0000922	9/30/79
10.	Wisconsin Electric Power Co.	Valley	WI 0000931	9/30/79
11.	Wisconsin Electric Power Co.	Pleasant Prairie	WI 0043583	9/30/80
12.	Wisconsin Power & Light Co. (Rock River)	Beloit	WI 0002402	9/30/79
13.	Wisconsin Power & Light Co.	Portage	WI 0002780	9/30/79
14.	Wisconsin Power & Light Co.	Sheboygan (#1-4)	WI 0001589	9/30/79
15.	Wisconsin Public Service Corp.	Kewaunee	WI 0001571	9/30/79
16.	Wisconsin Public Service Corp.	Pulliam	WI 0000965	9/30/79
17.	Wisconsin Public Service Corp. (Weston #1 & #2)	Rothschild	WI 0003131	9/30/79
18.	Wisconsin Public Service Corp. (Weston #3)	Rothschild	WI 0042765	6/30/83

TABLE 13

IMPLEMENTATION OF THE BASIC WATER MONITORING PROGRAM
STATE SUMMARY

Programs	Illinois	Indiana	Wisconsin	Minnesota	Michigan	Ohio
1	*	**	*	*	*	**
2	*	**	**	**	*	*
3	*	*	**	**	*	**
4	**	**	**	**	**	**
5	*	*	**	**	**	****
6	**	**	**	**	**	**
7	-	-	-	-	-	-
8	**	**	**	**	**	**

Programs

1. National Ambient Monitoring Network
2. State Monitoring Network
3. USGS Monitoring Networks
4. Quality Assurance Program
5. Intensive Survey Program
6. Effluent Monitoring Program
7. Proposed Biological Monitoring Program (1)
8. Data Interpretation and Reporting

*	Meets BWMP requirements
**	Minor program deficiencies/differences
***	Major program deficiencies/differences
****	Program cannot be evaluated

(1) All states except Michigan and Wisconsin participated to some extent in the Proposed Biological Monitoring Program in 1979. The work that was done met the BWMP requirements.

2. BASIC WATER MONITORING PROGRAM, FEDERAL ACTIVITIES

The Federal role for implementation of the BWMP is one of overview for all the elements of the BWMP except Data Interpretation and Reporting and Effluent Monitoring, which are described below:

a. Effluent Monitoring

Recognizing that in Region V, the States have all been delegated responsibility for administering the NPDES program, none-the-less, the Federal role in effluent monitoring remains very active. This is partly in response to Headquarters guidance that the Regions complete approximately 20% of the compliance monitoring annually. However, as administered in Region V, the compliance program is also used to support an active enforcement program with respect to major dischargers. Beginning in 1979, portions of these resources were used in initiating programs related to the identification and quantification of toxic and hazardous sources. As a result less emphasis was placed on compliance work than would normally be the case. During FY 1980, the following inspections were completed at major dischargers.

Inspection	Commitment	Accomplished
CEIs	125	76
CSI (Toxic)	18	12
CSI (Non muni, Non-toxic)	8	24
PAI	55	2

b. Data Interpretation and Reporting

The Federal role in Data Interpretation and Reporting includes the following:

Headquarters assigns a STORET representative for each Region. This individual has the responsibility for establishing and implementing STORET policies, for determining which data should and should not be stored, who should or should not be using the system and what their usage allowance should be. This individual can provide direct assistance or questions pertaining to the use of STORET programs and other technically oriented matters. The Regional STORET Representative will store data for states when necessary. At the present time, data is stored for Indiana until such time as the state has hired sufficient staff.

3. GREAT LAKES PROGRAM

a. Open Lake Intensive Surveys

1). State Role

There was no open lake monitoring by Region V states in 1979. The lakes are either intrastate or international in character and require unique resources to monitor, i.e. large vessels, oceanographic sampling equipment, and navigation systems which are not otherwise required by the states for monitoring. Therefore, open lake monitoring has been a federal responsibility.

2). Federal Role

Open water surveillance/water quality monitoring was completed on Lake Erie in FY 1979, and Lake Huron in FY 1980. The scientific and operational crew were provided by a contractor. Data will be analyzed during FY 1981-82 by GLNPO staff for each lake with contract assistance.

b. Loadings

1). Atmospheric Deposition

During 1979, the Region V S&A Division operated a 36 station bulk sampling network at or near the shoreline of the Great Lakes, except for Lake Ontario. The sampling represented a very ambitious effort in that it was intended to provide estimates of air pollution impacting the lakes for chemical, nutrient and inorganic toxic pollutants. The stations, consisting of static sampling devices, one for chemical parameters, one for nutrients and a third for metals analyses were operated by volunteers in the local area of the station. The samples were operated by volunteers in the local area of the station. The samples were collected over a 30-day period and then shipped to the Central Regional Laboratory (CRL), Region V for analysis. This effort was conducted in response to commitments to the IJC.

During 1980, the Great Lakes National Program Office assumed responsibility for this monitoring, and plans were formulated to improve the capability and the operation of the network. Following a review, a total of 39 locations were selected as sampling points, including 6 near Lake Ontario. Other modifications included a re-designed bulk sampler and the addition of wet event samplers at selected locations for weekly collection and analysis of pollutants associated with precipitation and the acidity of the precipitation. The analysis of the samples will be completed by CRL under contract. Perhaps most significant of the changes, the samples will be collected by state air agency personnel under contract to GLNPO.

a). State Role

The States did not have an active role in the operation of this network during 1979. Several states have contracted with GLNPO for this work in FY 81.

b). Federal Role

The stations were operated throughout the year. Following analysis, a laboratory report was published and the data were forwarded to the IJC for use in developing estimates of the atmospheric loadings to the five Great Lakes. A similar effort is carried out by the Canadians in estimating lake impact. However, significant differences result in data sets which are not comparable. The Canadians use wet event samplers and analyze the sample associated with precipitation. It is difficult to arrive at a conclusion of the usefulness of the data collected by these networks. State of the art techniques do not provide direct measurements of atmospheric loadings to water bodies.

2). Tributary Storm Event Monitoring

a). State Role

No monitoring programwas conducted in 1979. In 1980 the States of Michigan and Wisconsin were given GLNPO funds to conduct high flow studies on selected Lake Michigan tributaries. The purpose was to improve the annual estimates of loading to the Great Lakes, and to determine the effectiveness of phosphorous management.

b). Federal Role

The GLNPO provided funds to Michigan and Wisconsin for the work described above.

3). Tributary and Point Source Inputs (Phosphorus Management)

a). State Role

The states conducted monthly monitoring on major tributaries in order to provide data to calculate annual loadings to the lakes, and they also monitored selected point source dischargers.

b). Federal Role

One of the primary purposes of the loadings program is the evaluation of ongoing and alternative management programs and the prediction of the effect of various phosphorus management policy options. GLNPO is coordinating the development of mathematical simulations to make those predictions.

4). Rivermonths, Embayments and Nearshore Studies

a). State Role

In 1979 the State of Michigan was issued a grant to conduct water quality nearshore studies at Cheboygan, Alpena and Harbor Beach.

b). Federal Role

In 1979 the GLNPO issued grants and contracts to conduct plankton, sediment and water monitoring along the southern shore of Lake Erie. In 1980 GLNPO funded the Michigan nearshore study and with LLRS conducted a study of Saginaw Bay in conjunction with the open lake survey on Lake Huron. In 1979 nearshore studies were conducted in Lake Michigan. Several nearshore studies have been conducted in Lake Erie by the Army Corps of Engineers, and currently NOAA is conducting a nearshore study in Sandusky Bay with Heidelberg College as the subcontractor.

c. Fish Monitoring

A monitoring strategy for toxic substances in fish of the Great Lakes is proposed for 1981. The monitoring program will include Great Lakes tributaries and the open lakes. The purposes of this element of the surveillance plan are to determine if coho salmon and lake trout are in conformance with US FDA established limits on toxic substances in fish, to determine the effectiveness of remedial programs such as the ban on DDT and the restrictions on use of PCB's and to dectect other compounds which may accumulate in fish. Collections will be by State agencies and the US FWS, and the analyses will be performed by US EPA and US FDA.

1) Open Lake Fish Monitoring

a). State Role

No State monitoring program.

b). Federal Role

This program was initiated in Lake Michigan during 1969 by the U.S. Fish and Wildlife Service. It has been expanded to where there are now thirteen areas from the U.S. portion of the Great Lakes from which fish are collected by the USFWS. Fish are analyzed to determine PCB concentrations as well as chlorinated pesticides, heavy metals and other toxic compounds.

2) Tributary Fish Monitoring

a). State Role

Several states collected resident fish samples, as described in the GLNPO fish monitoring strategy, in FY 80 from selected Great Lakes tributaries; and most, if not all, Great Lakes states will collect such samples from additional selected tributaries in FY 81. Upon reciept of information from EPA of any specific toxic contamination problems in these collections, states are expected to perform specific toxic trend analyses in subsequent annual fish collections in their own laboratories to determine the effectiveness of remedial programs.

b). Federal Role

U. S. EPA provides laboratory support for the GC/MS analysis of the first state collection from all selected tributaries.

d. Sediment Survey for Toxic Substances in Harbors

a). State Role

No State monitoring program.

b). Federal Role

No Federal program during 1979. However, a survey of sediments in 91 selected harbors over the next three years will be performed by U.S. EPA - GLNPO to determine the location and degree of toxic contamination of harbor sediments. This information will strongly indicate probably sources of contamination to the waters column and biota.

e. Water Intakes

1). State Role

No monitoring was completed during 1979.

2). Federal Role

No monitoring was completed during 1979. However, contracts are presently initiated to collect weekly water samples and phytoplankton on all samples and heavy metals on selected samples to permit annual assessment of each lake for trends during non-intensive study years.

f. Support to Federal Programs

1). O&M Inspections of Facilities located on Tributaries

a). State Role

The States, through their own O&M programs, perodically evaluate POTW's on the Great Lakes Basin.

b). Federal Role

Funds are being provided by the GLNPO for a study to be contracted to private industry, for inspection and evaluation of 30 POTW's located in the Great Lakes Basin; then 15 of the 30 plants evaluated will be given in-depth analyses to arrive at schemes for correction of problems found.

2). Fugitve Emissions

a). State Role

No State monitoring program.

b). Federal Role

No Federal monitoring program in 1979. However, there has been interest expressed in these sources of air pollution. This lead to a contract in FY 1980 which was managed by the Enforcement Division. It was concluded that very significant amounts of these emissions impact the Great Lakes.

3). Fish Monitoring for Priority Pollutants

(See c. Fish Monitoring)

4). PCB Evaluations

a). State Role

The States of Michigan and Wisconsin have conducted extensive sampling for PCB's on the Sheyboygan, Shiawassee, Saginaw, Pine and Tittabawassee Rivers in connection with their delegated enforcement authority.

b). Federal Role

Special remedial and mitigation feasibility studies have been sponsored by EPA's Office of Marine Activities, the Army Corps of Engineers and the Great Lakes National Program Office in areas not otherwise covered by the Basic Water Monitoring Program.

4. SECTION 208 AREAWIDE WASTE TREATMENT MANAGEMENT

a. State Role

(1) Illinois

Section 208 funds are currently being use to support the National Urban Runoff Program activities by the Northeastern Illinois Planning Commission at Glen Ellyn, Illinois. The project will assess the effects of storage detention on pollutant loads and will evaluate the potential load reductions due to source controls. Seasonal surveys will quantify pollutant contributions from all significant sources.

SIMAPC (Southwestern Illinois Metropolitan and Regional Planning Commission) does not have any ongoing monitoring; however, this agency has collected monitoring data in two areas: 1) Agricultural Watershed Study - samples were collected in November, 1980; and 2) Urban Stormwater Runoff Project - samples were taken on December 1, 1979.

The State of Illinois (EPA) has ongoing monitoring activities in the following three areas:

- Nationwide Urban Runoff Program, Champaign, Illinois-this urban runoff monitoring is directed at evaluating the effectiveness of municipal street sweeping activities.
- Monitoring and evaluation of the effect of applied agricultural Best Management Practices (BMPs) on water quality in the Blue Creek Watershed. The primary purpose is to determine the actual yield of pollutants from a variety of agricultural practices to downstream waters and its effect upon water quality and water uses.
- Expansion of toxicity and aquatic life impacts of significant industrial and municipal discharges. The objective is to characterize and assess the environmentl impacts of trace organics discharged from point sources to surface waters.

(2) Indiana

The Indiana Stream Pollution Control Board and several of the areawide planning comissions have conducted monitoring in the following areas from 1978 to the present. These efforts are described below.

a) Intensive surveys for 8 segments to support non source WLA and permit reissuance. Surveys consist of 24 hour composite sampling of dischargers, receiving streams and tributaries.

b) Reaeration studies for 7 segments to support point source modelling.

c) Determine the existing and potential use (life supporting ability) of certain stream reaches, in support of development of limited use classification.

d) Contract for analysis of toxicants to support poorly equipped and staffed state program.

Northwestern Indiana Regional Planning Commision (NIRPC) 208 funds are being utilized to fund monitoring programs for overland runoff from various types of land - use in the NIRPC planning area. The information is intended to provide loading factors for various land-uses for stream modeling purposes. Stream sampling programs have been initiated or planned for the Little Calumet and Grand Calumet Rivers to determine water quality conditions under both low flow and high flow conditions.

Stormwater sampling of the Valparaiso lakes was funded in FY 80 to establish the impact of urban stormwater runoff on small freshwater lakes.

Salt Creek will be monitored for the determination of spawning potentials for lake trout and coho salmon.

Michiana Council of Governments (MACOG) has proposed to sample non-point source loadings from agricultural sources in the Juday Creek basin for the purpose of evaluating agricultural BMPs.

MACOG completed sampling of Travis Ditch Trail Creek and the St. Joseph River under the FY 1978 208 program. The Travis Ditch sampling was conducted to determine the need for advanced waste treatment at Valparsiaso Indiana. The Trail Creek and St. Joseph data were used to determine the impact of combined sewer overflows on the St. Joseph River and Lake Michigan.

MACOG also sponsered a sampling program for area well owners to determine the extent of toxic pollutants in well water supplies.

Indiana Heartland Coordination Commission (IHCC) in cooperation with the U.S. Department of Agriculture's Model Implementation Plan (MIP) efforts has initiated sampling on Stotts Creek and Eagle Creek in the Indianapolis area to determine BMPs for controlling agricultural sources of sediment and nutrients.

In addition, Region VI is undertaking a biological sampling program on the Blue River, the White River and its tributaries to develop a biological water pollution index.

In addition to the specialized monitoring programs, the areawide agencies utilized 208 monies to conduct baseline water quality sampling for the purpose of waste load allocation in original 208 plan development. In the case of Pipe and Killbuck creeks in Region VI the sampling established that waste load allocation modeling would not be justified

(3) Michigan

Michigan completed 6 intensive stream surveys with their FY 78 208 grant. The surveys will be expanded and formalized into WLAs as a part of Michigan's stream classification effort. Eight additional streams were studied with FY 79 208 dollars. Because of EPA's 208 funding policy, WLAs have not been funded for FY 80 or FY 81; however, Michigan has suggested the use of Supplemental FY 81 106 dollars for a WLA effort.

Michigan currently has a ground water grant to develop a state strategy. It will also do preliminary remedial monitoring of five of eight case study sites and intensive monitoring on the remaining three. Four areawide agencies will also do monitoring to develop preventative actions on four additional sites.

The status of Michigan's monitoring effort for the future has been placed in question because of recent budget cuts. Some areas have been severly cut back or eliminated. The current 106 (FY 81) program plan reflects many of the above issues.

(4) Minnesota

The State of Minnesota conducted water monitoring activities with 208 funds. Areas that have been sampled are:

a) Minnesota River intensive survey work for WLA purposes in the metro area.

b) Minnesota River sampling in the outstate area to assess nonpoint source contributions to the downstream problems.

c) Sampling on the Mesabi Range in Northeastern Minnesota to assess pollution from copper and nickel mining and iron ore waste disposal.

d) Ground water monitoring in site specific areas for toxics and fecal coliform contamination.

The Metropolitan Council of the Twin Cities has conducted monitoring in the following areas: 1) Rural nonpoint source monitoring on selected watersheds in the 7- county metro area (1980); 2) Urban nonpoint source monitoring on selected watersheds; 3) Point source monitoring on the Mississippi River for model verification and calibration work and 4) monitoring of 50 lakes in the 7 county area for toxics and traditional parameters.

(5) Ohio

Monitoring efforts funded under the Water Quality Management Program (Section 208) were initiated in Ohio's designated areas as early as 1974. The Ohio Environmental Protection Agency (OEPA) performed monitoring, supported with 208 funds, beginning in 1977.

OEPA's major initial monitoring effort under the 208 program was in support of the development of wasteload allocations for 112 water quality river segments in Ohio. The data encompasses physical and conventional chemical parameters. An intensive monitoring effort on the Great Miami River was recently completed. Subsequent to 1978, limited monitoring in mining and construction non-point sources has occurred.

The Miami Valley Regional Planning Commission (Dayton), through contract to the Miami Conservancy District, performed point source and urban stormwater related monitoring with 208 funds. The Toledo Metropolitan area council of government performed monitoring with 208 funds to help determine loadings to the Maumee River. The Eastgate Development and Transportation agency (Youngstorm) and the Ohio-Kentucky-Indiana Regional Council of governments (Cincinnati) relied primarily on existing data in the development of their water quality Management Plans. The Northeast Ohio four-County Planning and Development Organization (Canton) sampled several river segments within the Tuscarawas Basin to help characterize agricultural and urban runoff non-point source pollution. The Northeast Ohio areawide coordinating agency (Akron) performed monitoring to characterize urban non-point source pollution from specific land uses in Akron and performed an intensive survey to help develop wasteload allocations for the Black River, Tinkers Creek and the Middle Cuyahoga River.

(6) Wisconsin

The Wisconsin Department of Natural Resources has utilized §208 funds extensively for water quality monitoring. During the initial planning phases §208 funds were used to augment water quality data on the Wisconsin, Fox and Rock rivers. These Rivers are the largest in the State and experienced the greatest point and non-point source problems. The data was used to derive water quality models, standards and waste load allocations.

§208 funds are also presently being used in Milwaukee to determine Urban NPS pollution loadings and the pollutants in urban run-off. 208 funds are paying for a monitoring and evaluation study of WQM plan implementation in the Galena River basin in southwestern Wisconsin and in the Monitowoc River Basin in East Central Wisconsin.

(b) Federal Role

The federal role in 208 monitoring activities is to oversee the state and areawide projects.

5. HEADQUARTERS PROGRAM

a. Effluent Guidelines, Exposure/Risk, Fate and Dilution Studies (priority pollutants).

(1) State Role

No monitoring for priority pollutants is conducted.

(2) Federal Role

No priority pollutant samples were collected in 1979. In 1980, samples were collected by the Eastern and Central District Offices with assistance from the Central Regional Laboratory. The sample analyses were done by the CRL or completed by contract laboratories.

b. Hot Spot Studies

(1) State Role

No monitoring is conducted.

(2) Federal Role

EPA has completed 24 "hot spot" studies (5 in Region 5) of local areas projected to have toxics problems after BAT, as part of Paragraph 12 of the NRDC Settlement Agreement. These studies will provide insights into the source of water quality problems in urban waterways.

c. POTW/Toxics Project

(1) State Role

No monitoring is conducted.

(2) Federal Role

The POTW/toxics project is described in an Interim Report put out by the Effluent Guidelines Division entitled Fate of Priority Pollutants in Public Owned Treatment Works (EPA 440/1-80-301). Influent, effluent and sludge samples were collected from 20 selected locations throughout the country. This included two pilot studies, one in Indianapolis and one in Cincinnati, plus 18 other studies. The final report, which is to be completed in May or June 1981, will include 30 additional studies for a total of 50 studies for the project. Of these 30, 13 are in Region V.

6. OPERATION AND MAINTENANCE (O&M) PROGRAM

a. State Role

The operation of the program in each of the States is described below.

(1) Illinois

The State is conducting construction grant compliance inspections at the end of the first year after construction is completed.

Forms 7500 are filled out for all municipal inspections conducted (major and minor dischargers).

In addition, inspections are conducted without filling out Form 7500. These are mostly reconnaisance inspections conducted on minor dischargers by technicians.

Follow-up inspections are conducted on problem facilities, and technical assistance is being provided.

O&M manuals are reviewed in the Compliance Assurance Section.

(2) Indiana

No construction grant compliance inspections are conducted (these were discontinued in FY 1980). The state commitment for these was not met in FY 1979.

Forms 7500 are filled out at every major municipal discharger which is inspected. Usually a CEI or CSI (with completion of Form 3560) is conducted at the same time.

Inspections are also conducted which are not reported on Form 7500, but are reported on a State form. These inspections far exceed the number of inspections conducted for any other purpose.

The state conducts follow-up inspections at problem facilities, and provides technical assistance, either from State staff or by referral to the private sector.

The Plan Review Section provides review of O&M manuals. The O&M program for Indiana was significantly expanded in FY 1980.

(3) Michigan

The state is conducting construction grant compliance inspections annually for a 3-year period after completion of construction. Results are reported on Form 7500.

Manpower is deficient now to carry out a full O&M program; however, O&M inspections are being performed and the results reported on Form 7500. Also, whenever a CEI or CSI is done, a Form 3560 is completed.

Some inspections are performed that are not reported on Form 7500.

Finally, the state conducts follow-up inspections on an estimated 10% of the total inspections performed. Also, reviews of O&M manuals are performed.

(4) Minnesota

The State is conducting construction grant compliance inspections annually for a 3-year period after completion of construction. Results are reported on Form 7500.

There is no O&M inspection program as such. However, whenever a CEI or CSI is performed, page 5 of the Form 7500 is completed along with the Form 3560.

Follow-up inspections are being performed, as well as technical assistance.

Also, the State reviews O&M manuals and approves start-up services and plans of operation for plants within its jurisdiction.

(5) Ohio

The State conducts construction grant compliance inspections and reports the results on Form 7500. The state only completes audits that the USEPA specifically asks for. Four audits were completed at plants where construction had been completed in 1979.

The State conducts O&M inspections and reports the results on Form 7500. In addition, a Form 7500 is completed whenever a Form 3560 is filled out for compliance purposes.

The State conducts a great number of inspections other than those reported on Form 7500. Forms 7500 are completed for major dischargers only.

The State performs follow-up inspections and provides limited technical assistance to problem plants, including review of O&M manuals for plants in its jurisdiction.

(6) Wisconsin

For Federally funded projects, the State conducts a final audit on plants when construction is complete, but results are not reported on Form 7500. The Corps of Engineers conduct periodic inspections during construction of Federally funded projects. However, most projects are state-funded and inspected by State personnel.

The State performs O&M inspections, but results are not reported on Form 7500. State personnel write a narrative report for each inspection done.

The State performs follow-up inspections and technical assistance. They have an O&M team in the Green Bay office which performs O&M inspections in that district, plus any follow-up and technical assistance work.

Wisconsin believes O&M is an important supplement to enforcement. Actually, they have performed O&M efforts in place of CEIs and CSIs.

Also, the State provides review of O&M manuals for plants in its jurisdiction.

b. Federal Role

The role of the USEPA in the O&M program is mainly one of overview. However, in those areas where the States cannot meet their commitments due to a lack or resources, the USEPA has been providing limited supplemental assistance. Assistance has mainly been provided in the area of conducting O&M inspections, and in providing limited technical assistance. The USEPA has also been managing a Region-wide O&M awards program which has recognized outstanding treatment plants in each state.

7. RESOURCE CONSERVATION AND RECOVERY ACT PROGRAM (RCRA)

a. State Role

For FY 79, the states are working on developing programs for RCRA, i.e., strategy of implementation, public participation, monitoring, etc. The thrust of the program is to have each state eventually implement their own programs. The states are conducting inspections under various state hazardous waste laws. RCRA became effective November 19, 1980. The states will be responsible for submitting to EPA letters of intent to apply for interim authorization. Interim authorization is phase I of the final RCRA program. State investigatiors will accompany Federal inspectors to various monitoring sites.

b. Federal Role

For FY 79, the Federal role was one of evaluation of the state's developmental program. For FY 80, the Federal role was guidance and evaluation of the state's interim authorization letters. The Federal government will have a primary implementation role if a state fails to implement the program. Federal inspectors will investigate those sites considered to be of imminent and substantial endangerment of public health and environment.

8. DRINKING WATER PROGRAM

a. State Role

The four areas of program activity that require monitoring are described under PROGRAM NEEDS in Appendix A. States which have requested and have been granted primary enforcement authority for the Safe Drinking Water Act (SDWA) regulations carry out this monitoring with the Region providing an overview role. The primary states in Region V are Illinois, Michigan, Minnesota, Ohio and Wisconsin. Indiana does not have a primary role but maintains a program which meets most SDWA monitoring needs for municipal systems.

Special issues exist in three states. Illinois has public water systems which exceed maximin containment levels for barium, fluoride and radium. Minnesota and Wisconsin lack laboratory capability to perform trihalomethane (THM) analyses. Region V plays a lead role in working with the states to resolve issues of this nature.

b. Federal Role

The Federal role of overview of State programs having primacy varies depending on the status of the State with regard to new Federal monitoring regulations. This because the states vary in their mechanism for adopting new regulations and in their view toward the need for certain of the Federal regulations. Therefore, for new regulations the primary role for monitoring may remain with the Region for an interim period of time. For these interim periods, the Region places a high degree of emphasis on cooperative agreements whereby the State executes the extra monitoring voluntarily as part of its routine program.

In the case of Indiana, the Federal role includes receiving the monitoring data from the State and local laboratories and checks these data for compliance with SDWA regulations. Region V carries out all monitoring needs in Indiana with regard to non-municipal community systems and non-community systems.

For all States, Region V plays a lead role in research need investigations, particularly those developed by Headquarters or the Region. Such investigations are also conducted by the states but on a more limited basis.

9. DREDGE AND FILL ACTIVITIES

a. State Role

Under section 401 (certification), states are required to review and certify any applicant's permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into navigable waters. Some monitoring may be done by states prior to certification.

b. Federal Role

No monitoring activities.

10. ENVIRONMENTAL RESEARCH LABORATORY - DULUTH (ERL-D)

a. State Role

No Monitoring activities

b. Federal Role

Historically, the major research emphasis at ERL-D has been on the effect of pollution on aquatic life. More recent efforts not only include continuous emphasis on the effects of waterborne toxic pollutants on aquatic life, but also on the effects of pollutants from atmospheric and solid residue sources.

11. LARGE LAKES RESEARCH STATION - GROSSE ILE (LLRS)

a. State Role

Funding of state monitoring activities is minimal. If states are sampling in an area of interest to the LLRS, funding may be allocated for the states to do additional work as needed.

b. Federal Role

The Large Lakes Research Station allocates funds to Universities, and to a lesser degree to states, to conduct water monitoring studies in Lake Huron and Saginaw Bay as well as other Great Lakes studies.